

FIG. 1

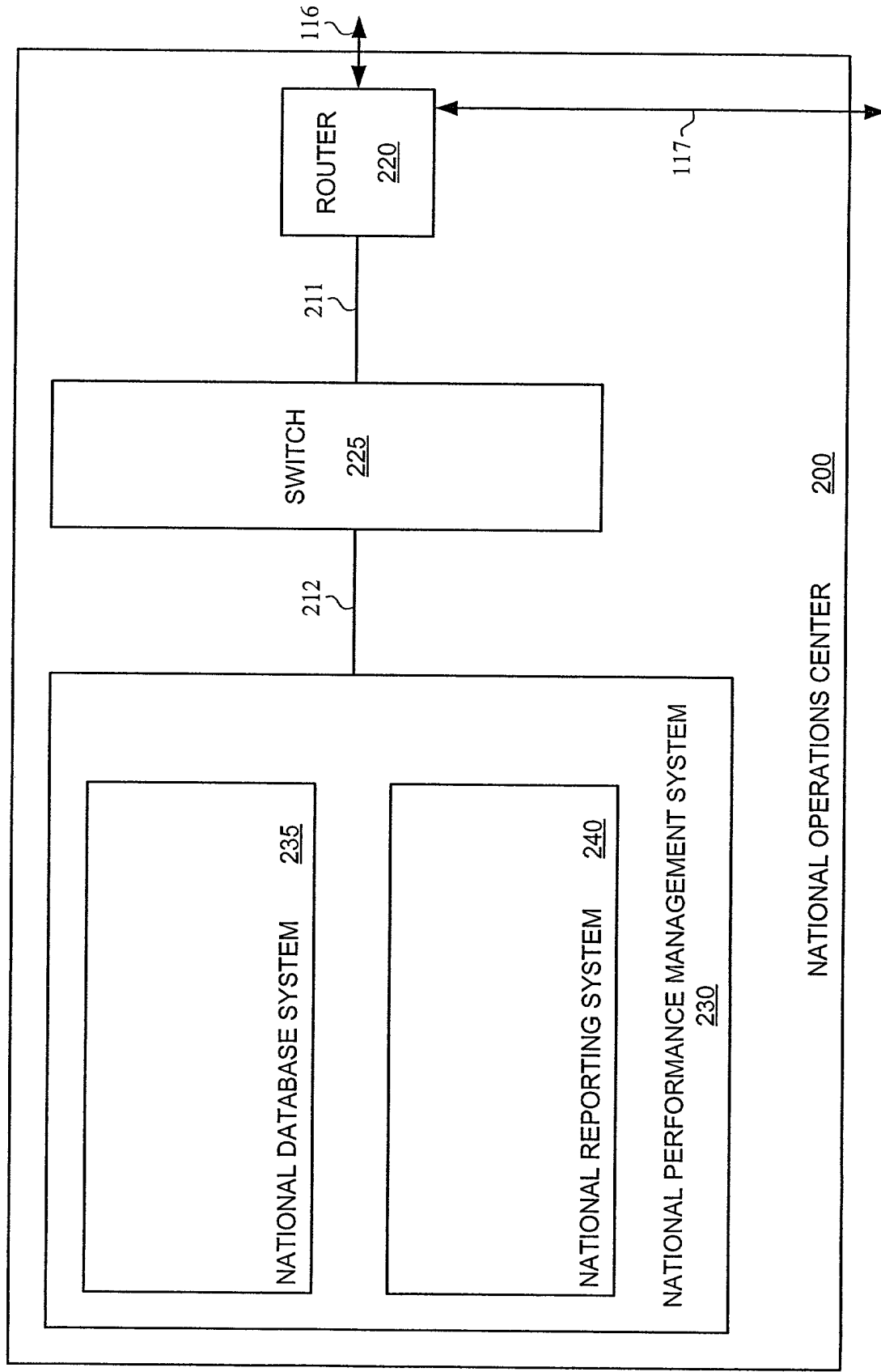


FIG. 2

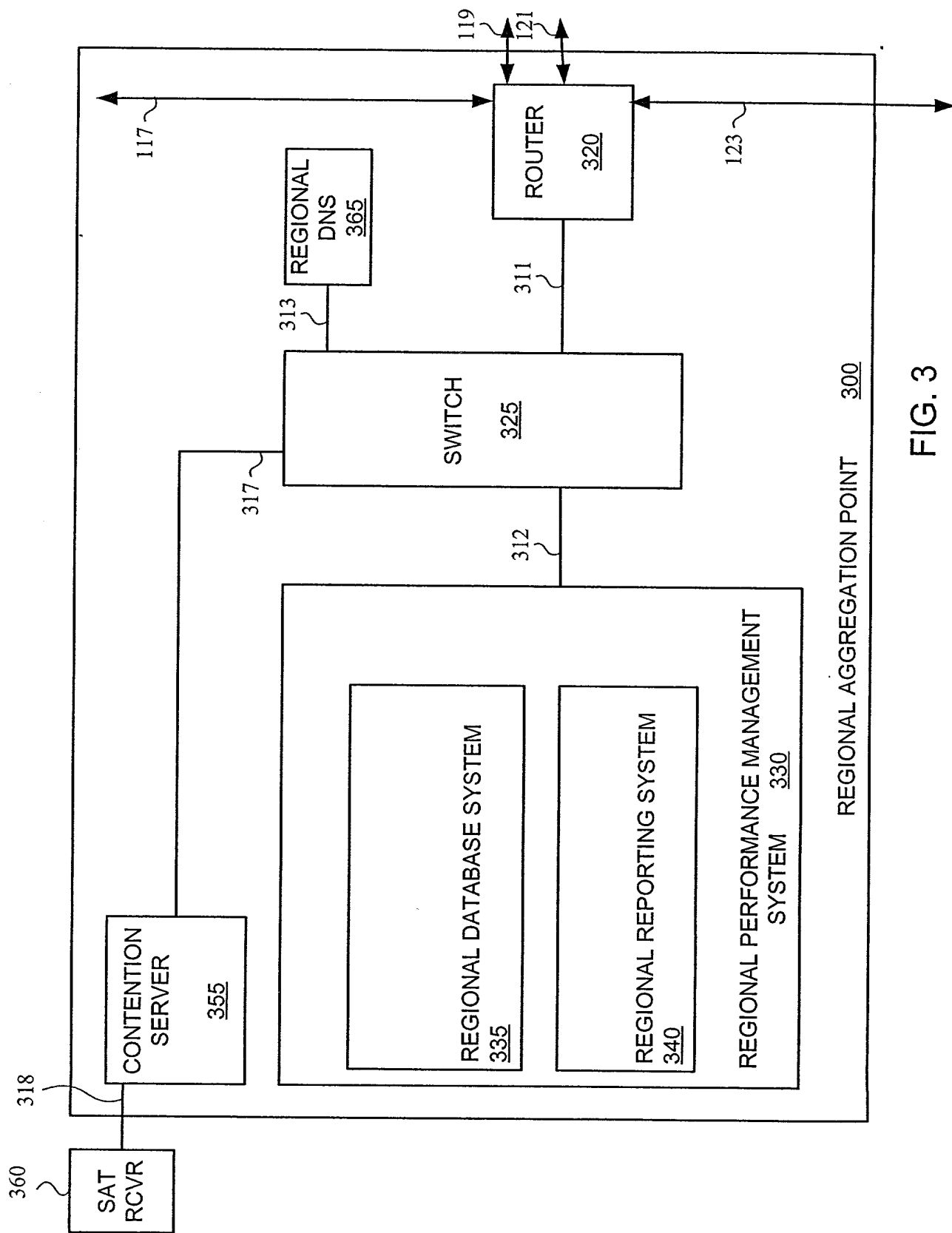


FIG. 3

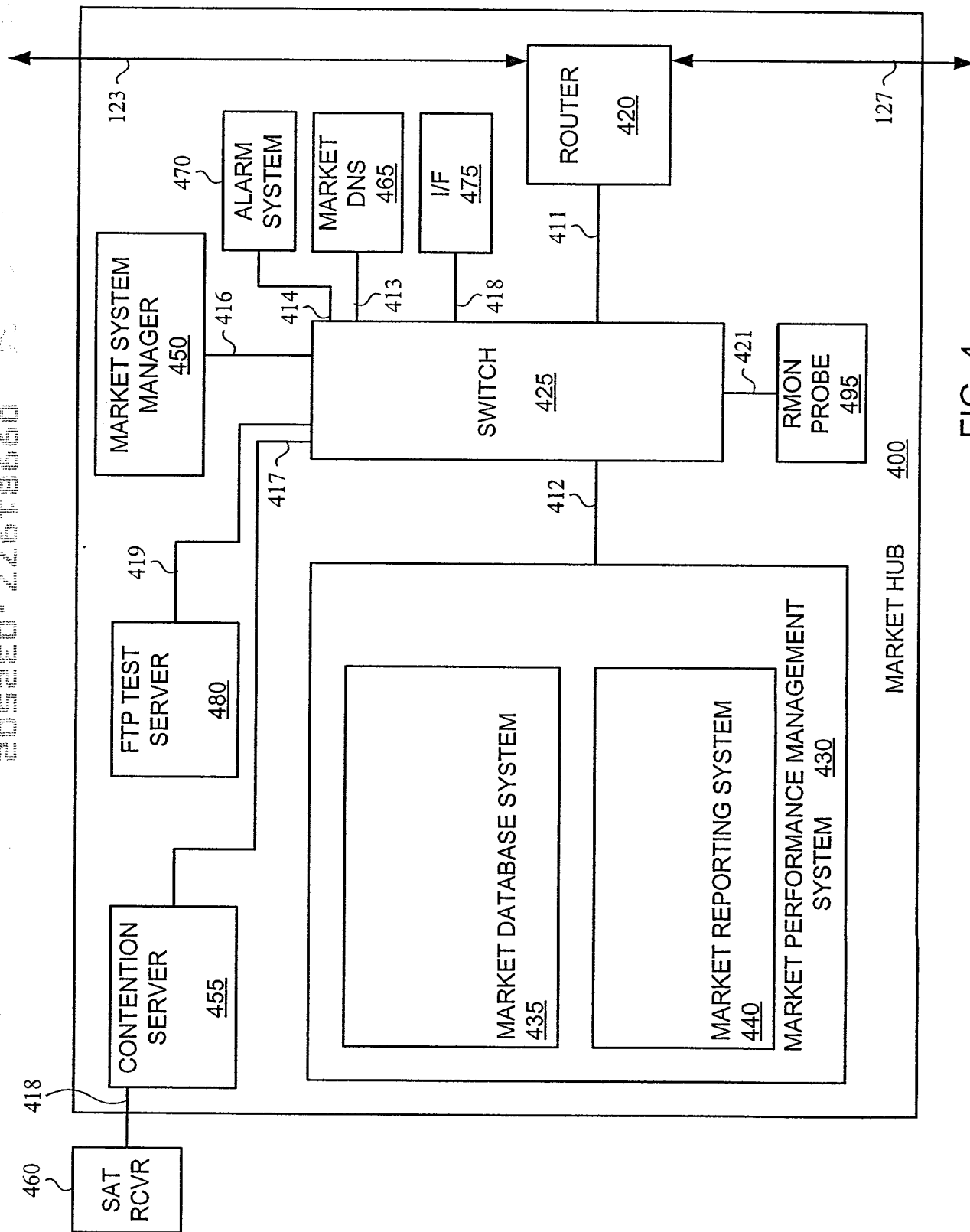
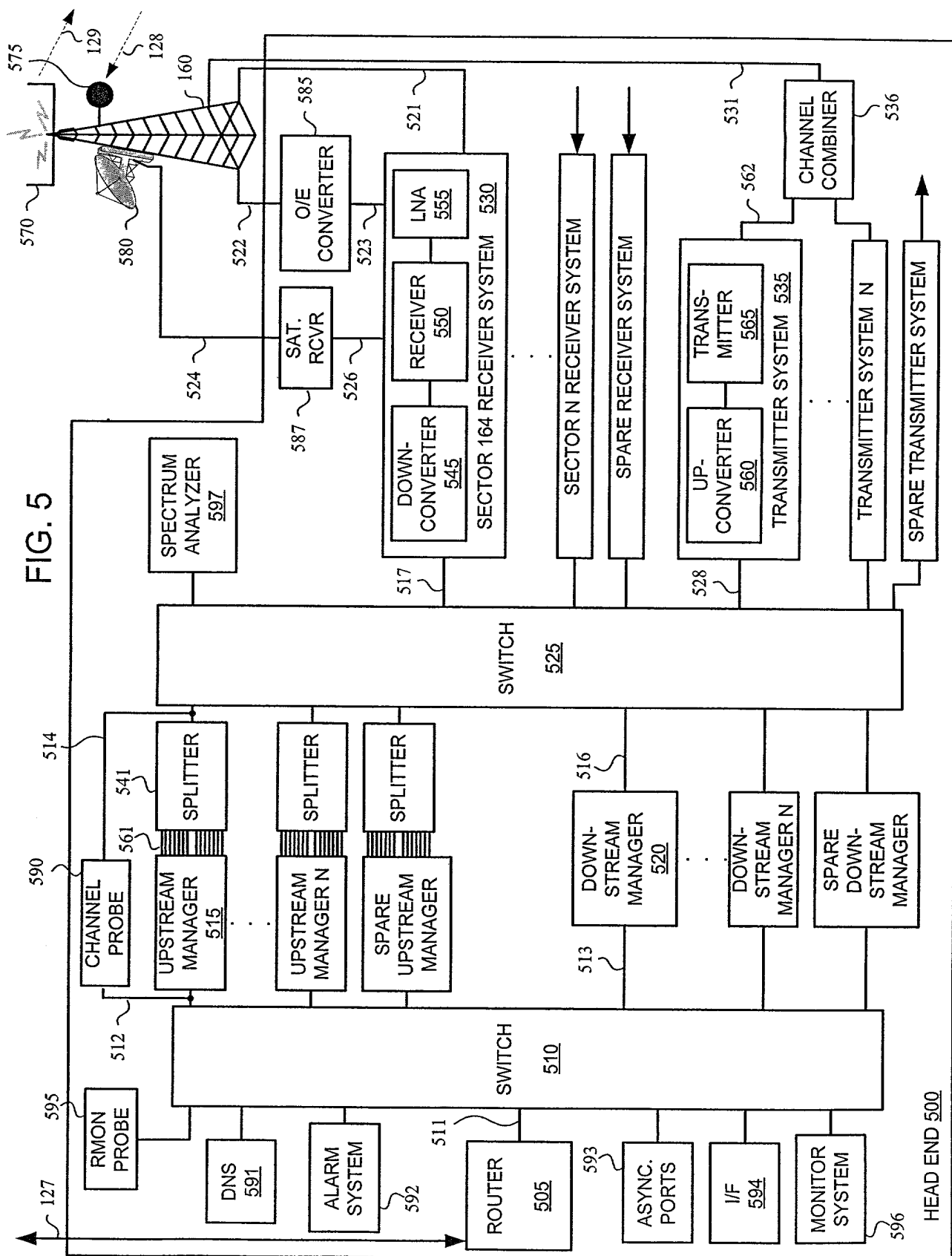


FIG. 4

3-7



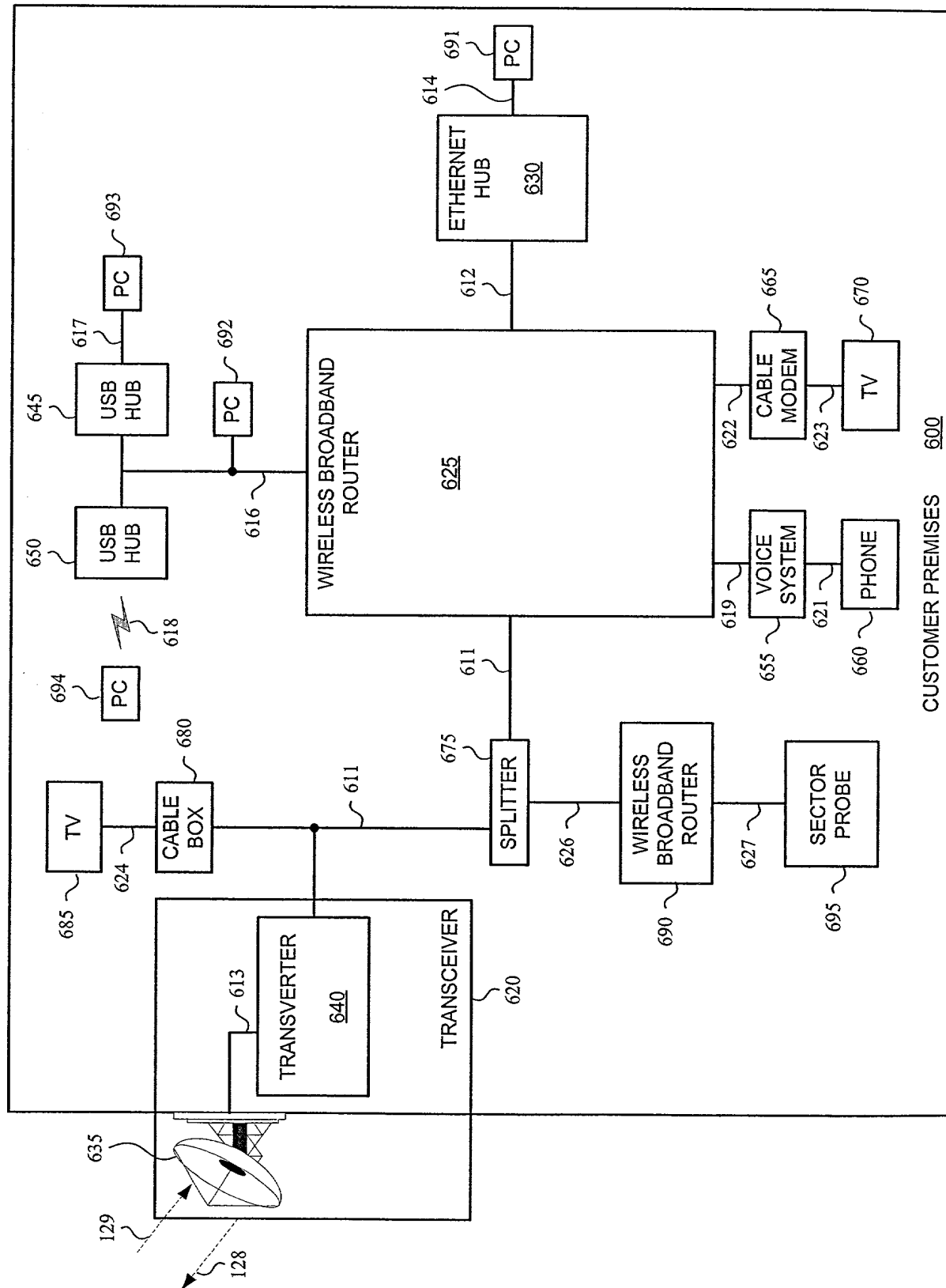


FIG. 6

PERFORMANCE  
MANAGEMENT  
SYSTEM  
700

COLLECTOR  
SYSTEMS  
710

CHANNEL  
PROBE  
712

SECTOR  
PROBE  
714

RMON  
PROBE  
716

CM  
STATUS  
718

DATABASE  
SYSTEMS  
720

MARKET  
DB  
SYSTEM  
722

REGIONAL  
DB  
SYSTEM  
724

NATIONAL  
DB  
SYSTEM  
726

REPORTING  
SYSTEMS  
730

MARKET  
REPORT  
SYSTEM  
732

REGIONAL  
REPORT  
SYSTEM  
734

NATIONAL  
REPORT  
SYSTEM  
736

FIG. 7

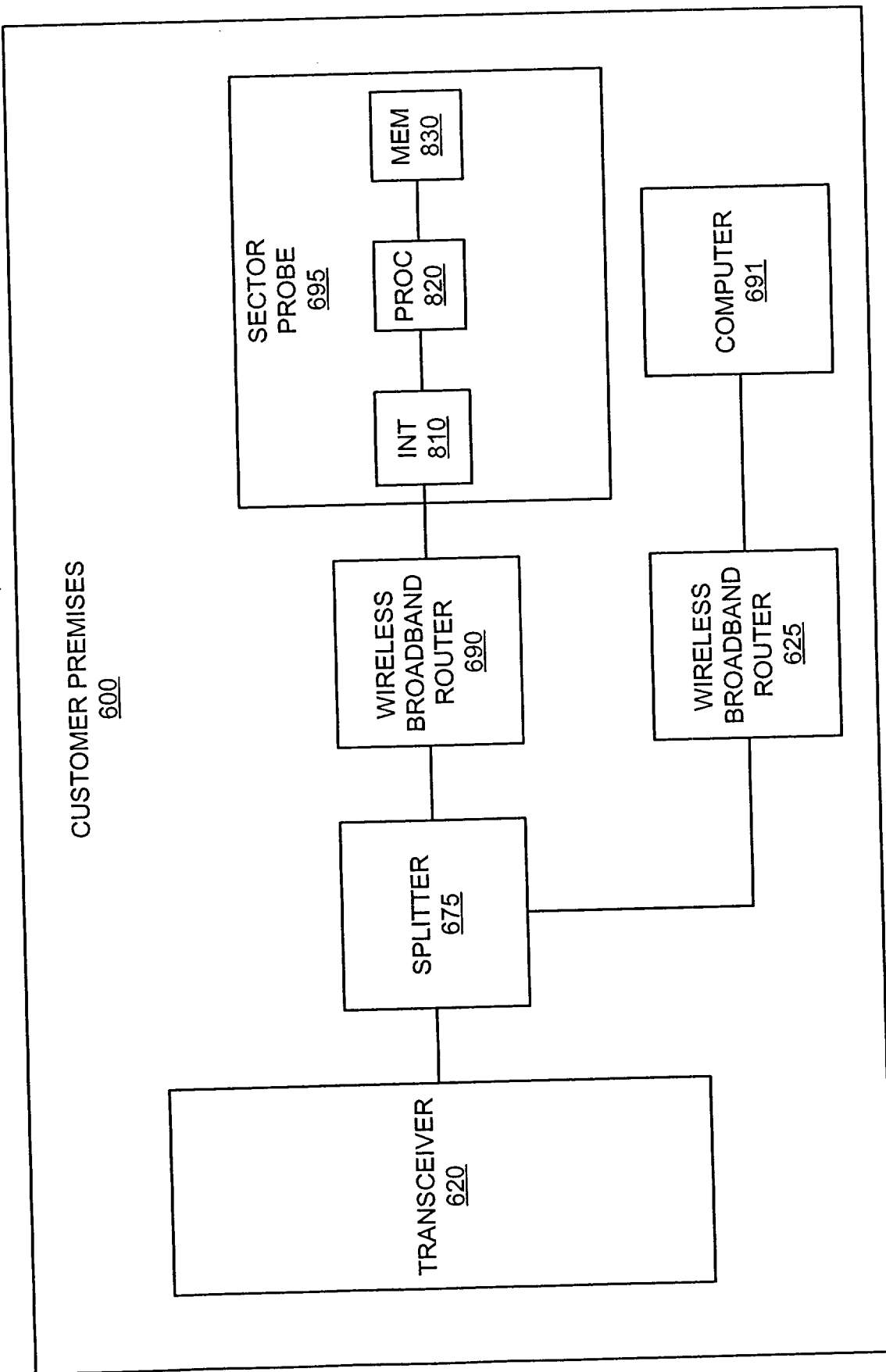


FIG. 8



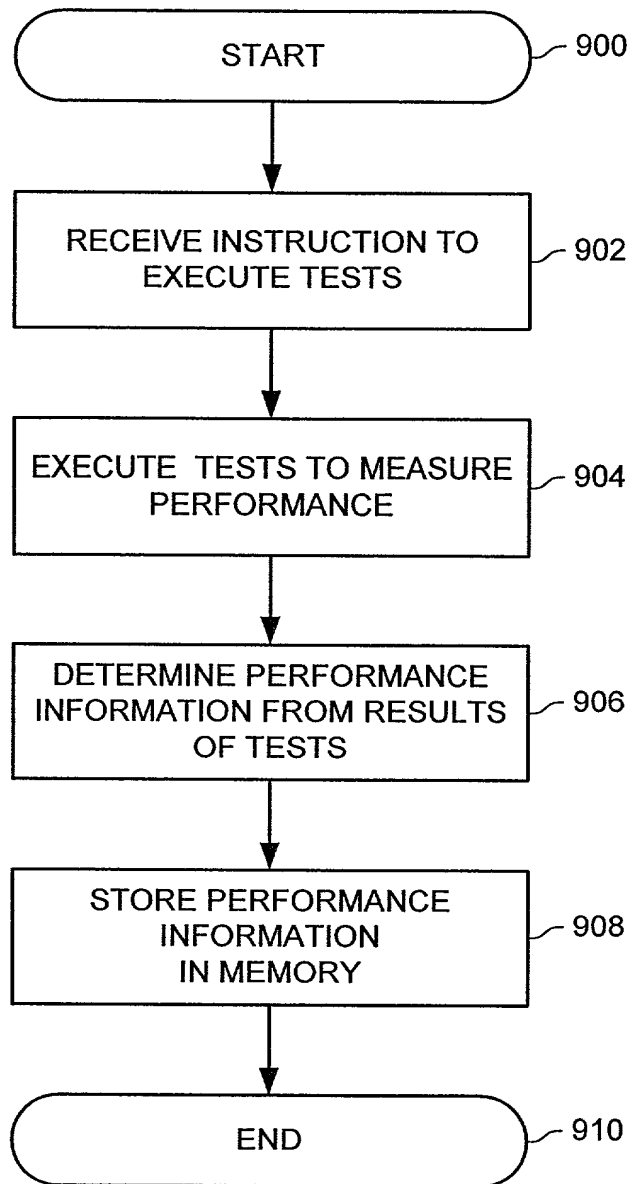


FIG. 9

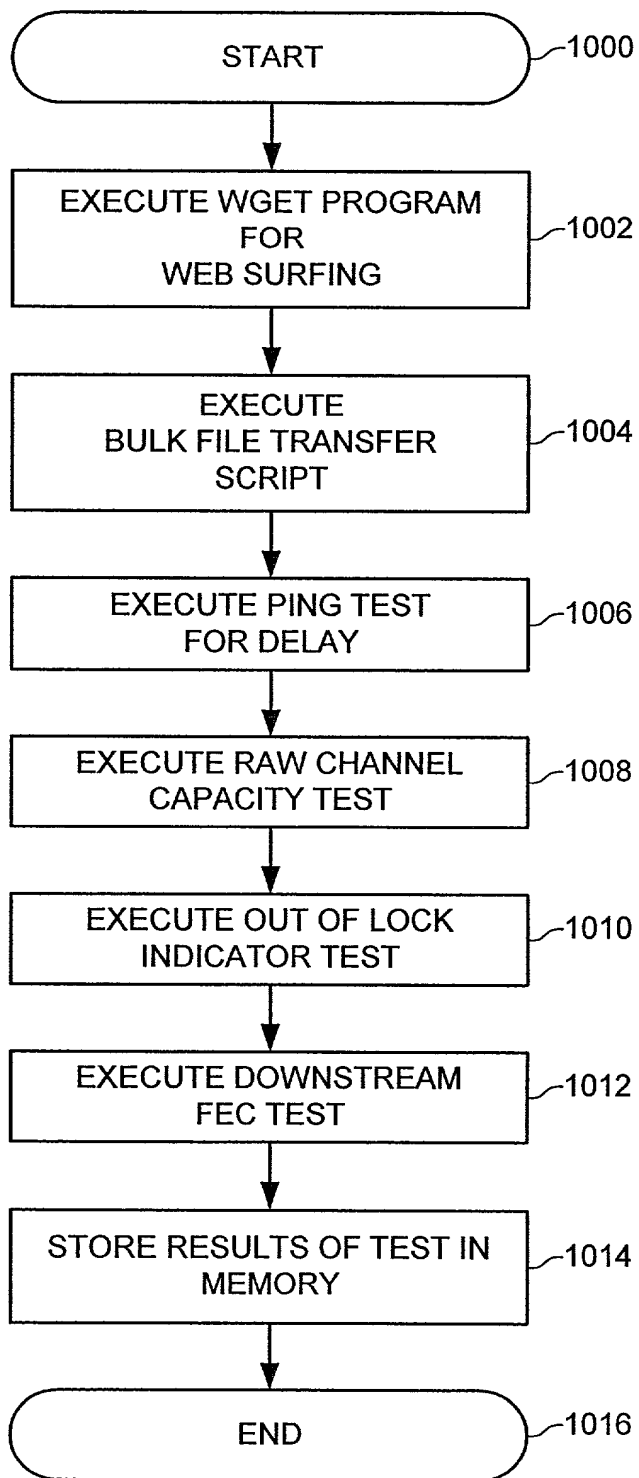


FIG. 10

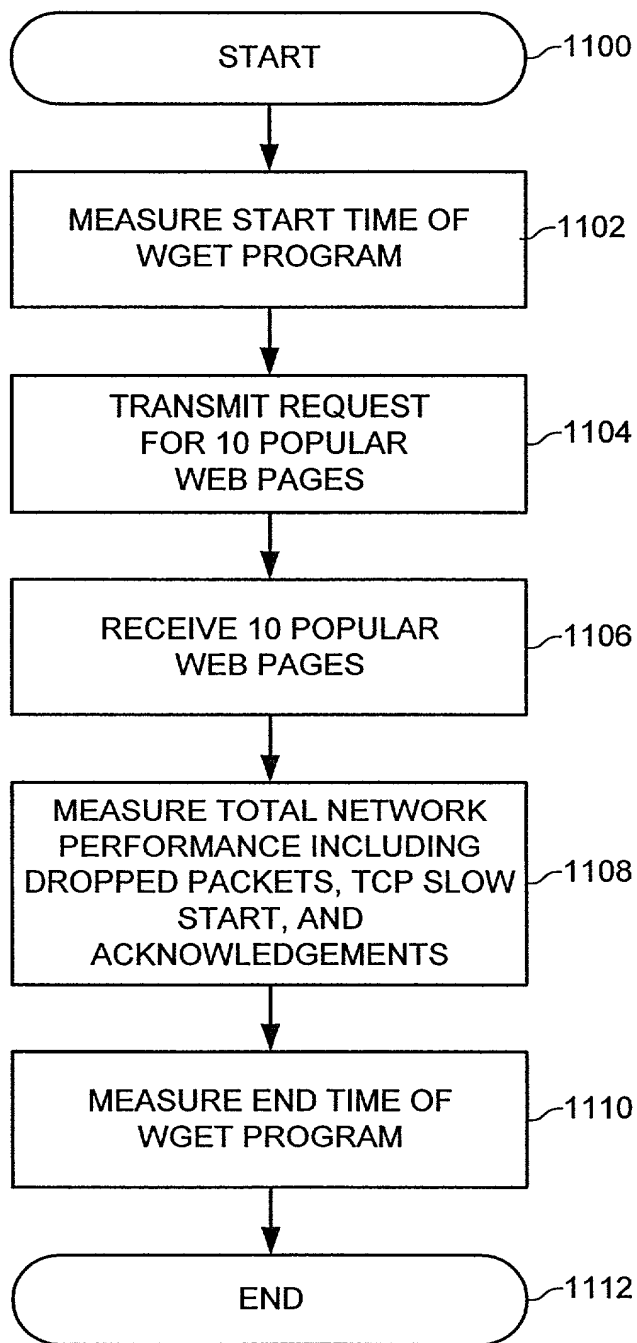


FIG. 11

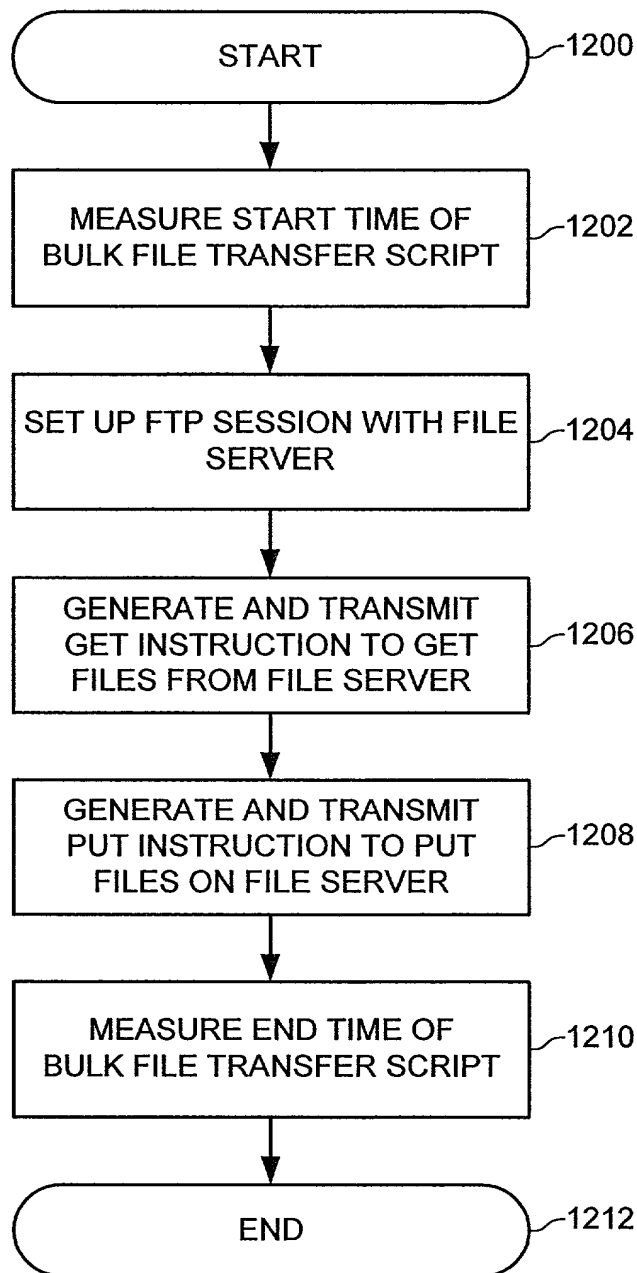
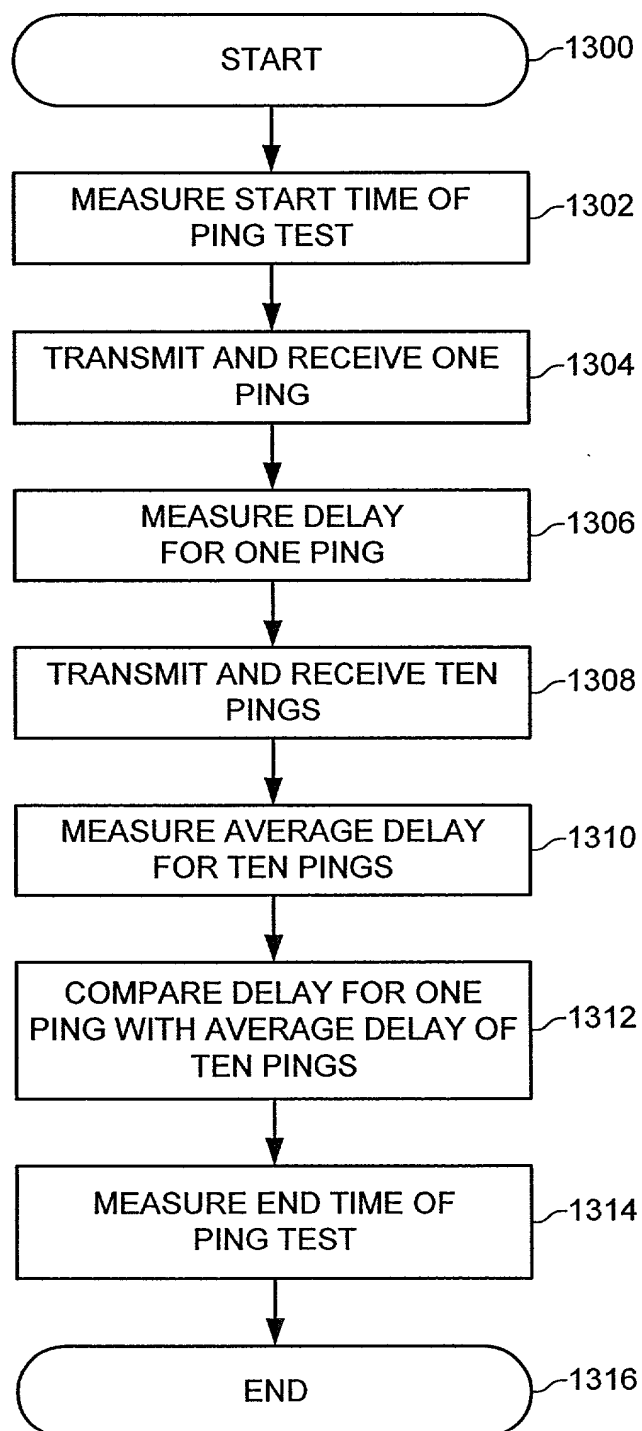


FIG. 12

**FIG. 13**

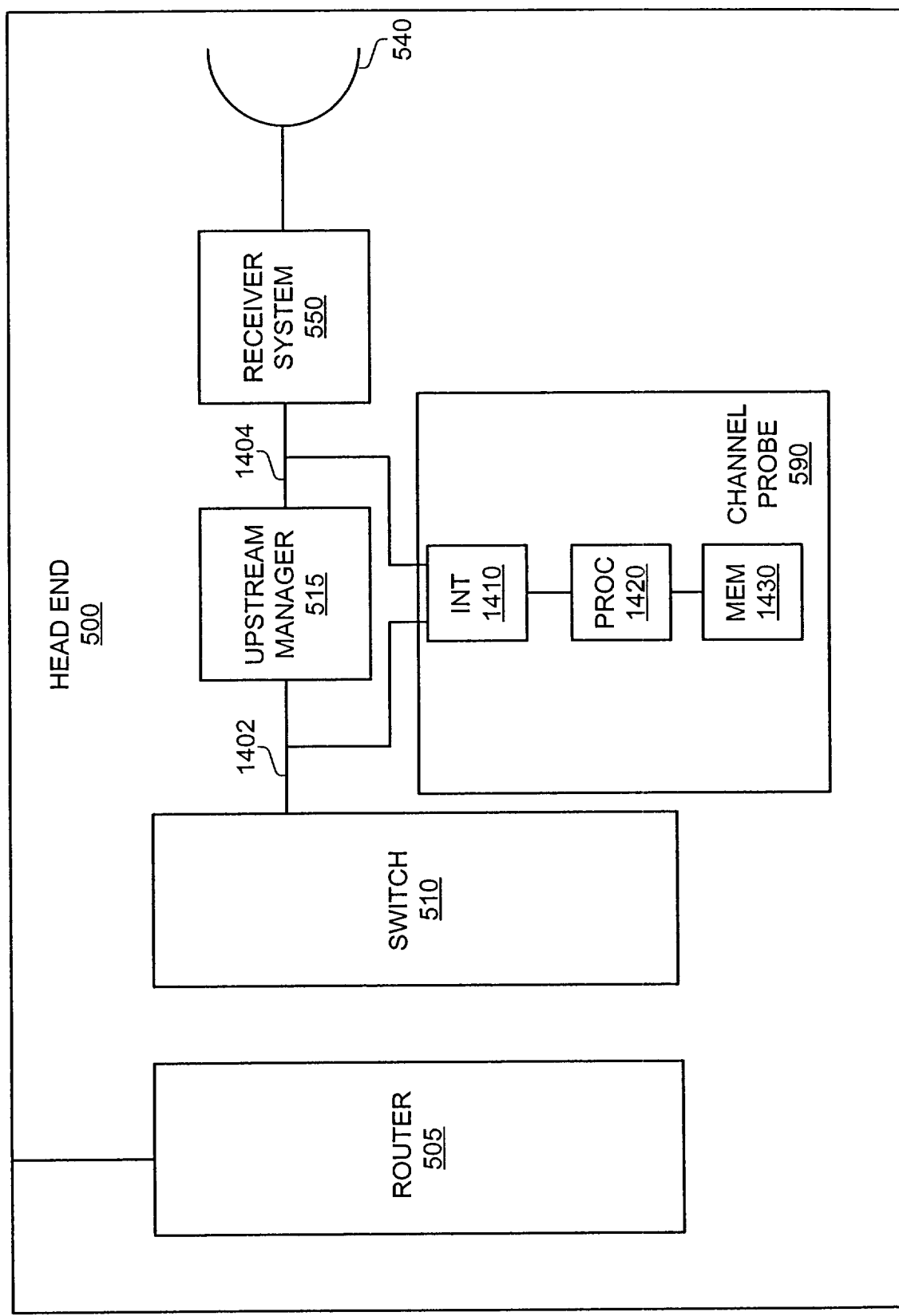


FIG. 14

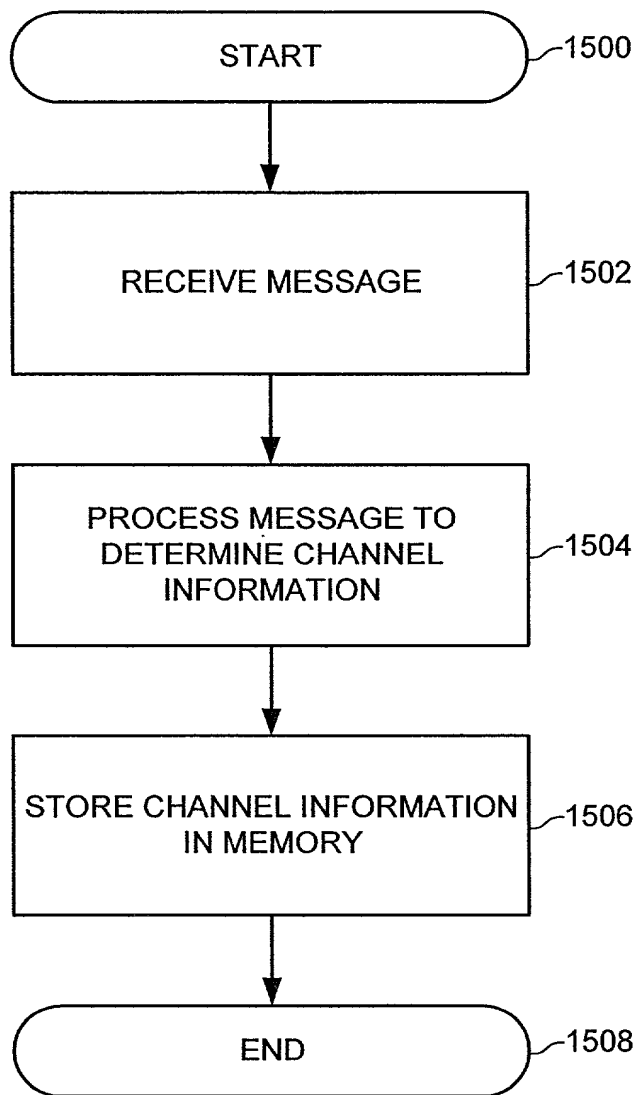


FIG. 15

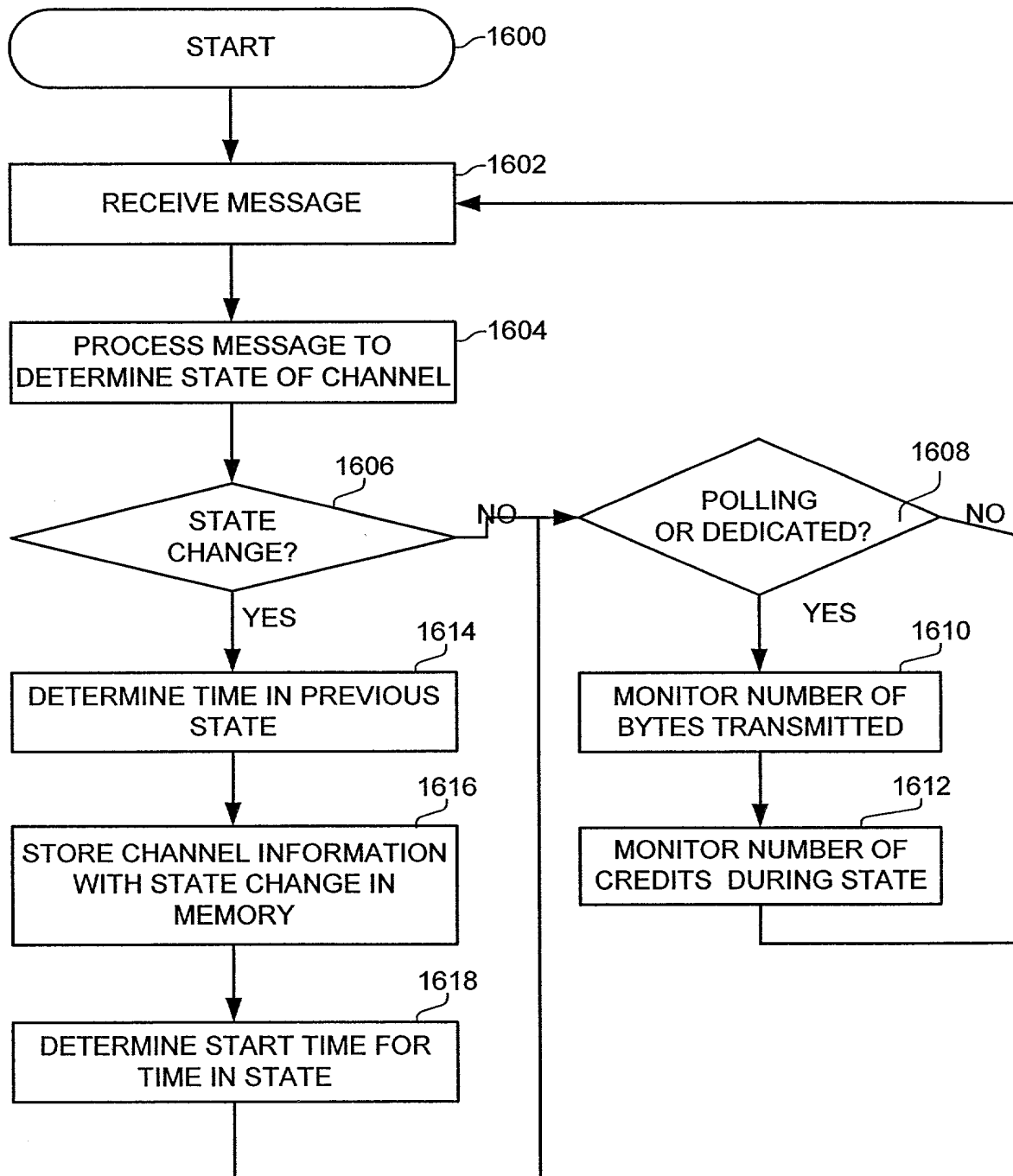


FIG. 16



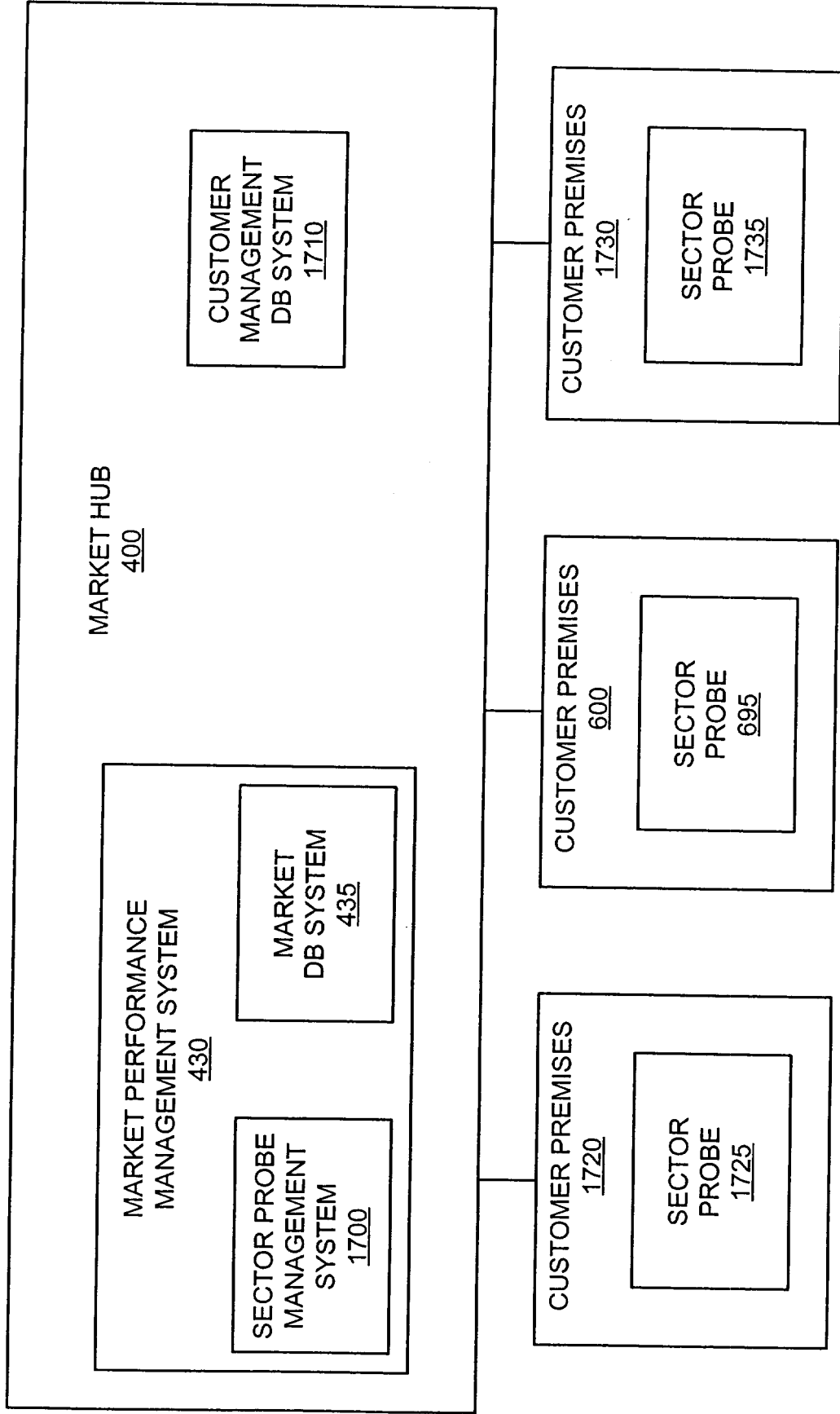


FIG. 17

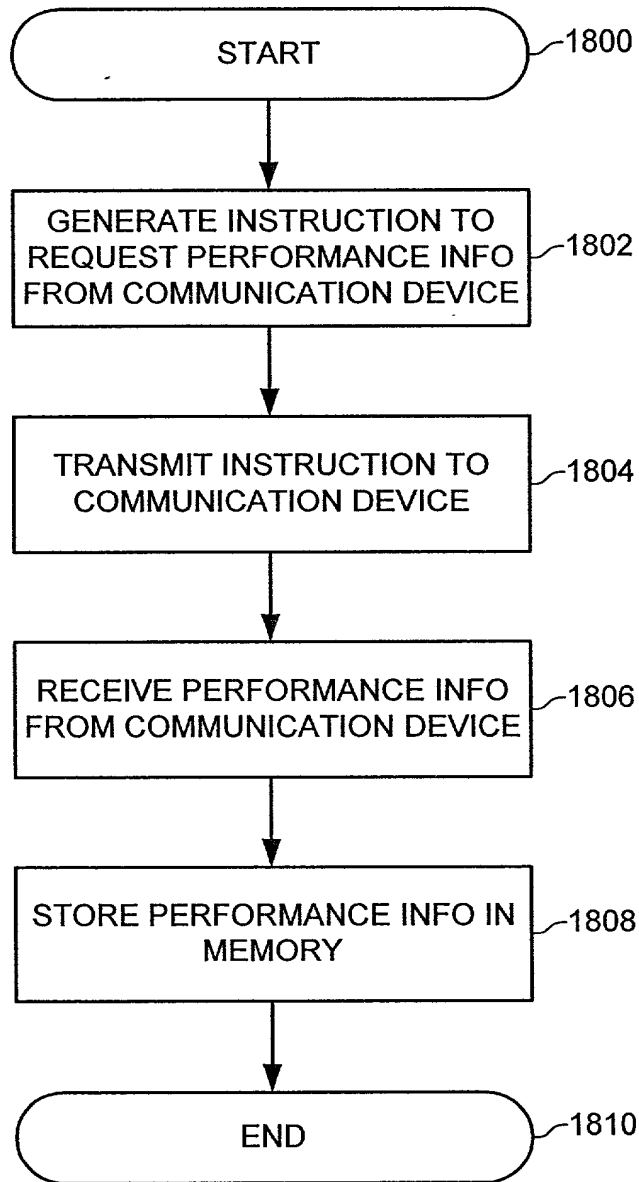


FIG. 18

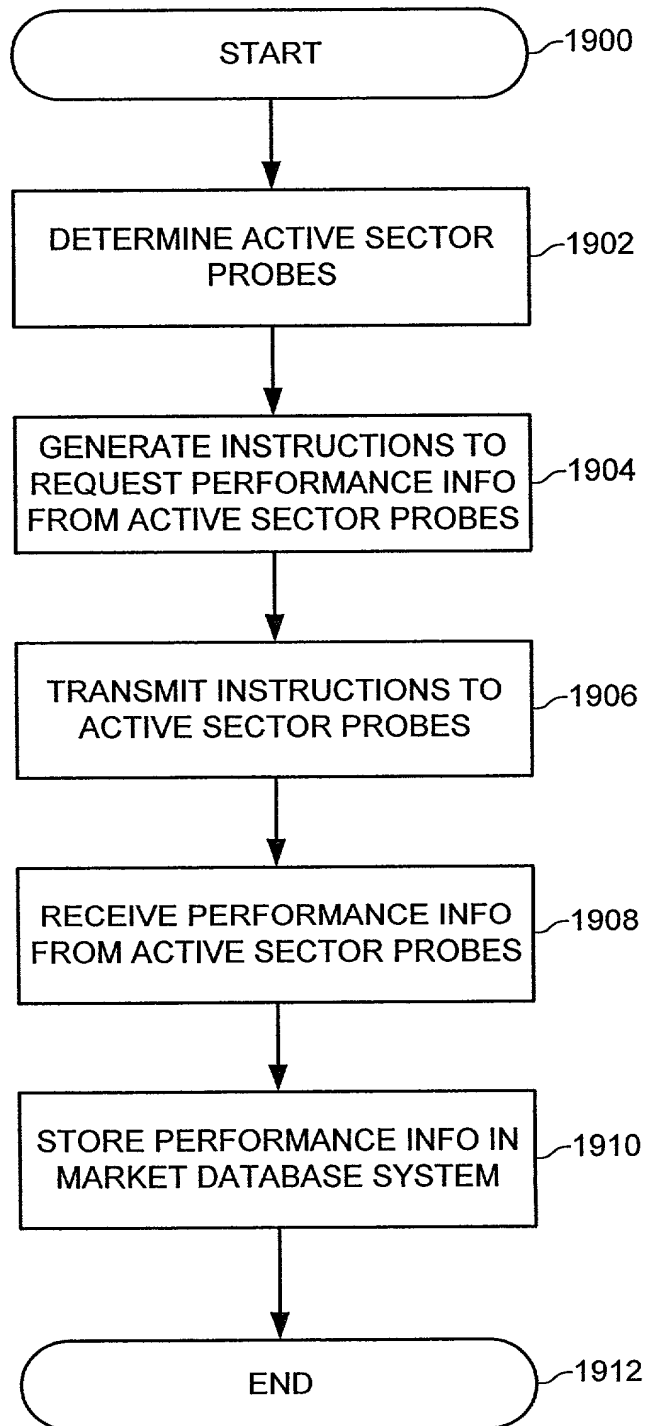


FIG. 19

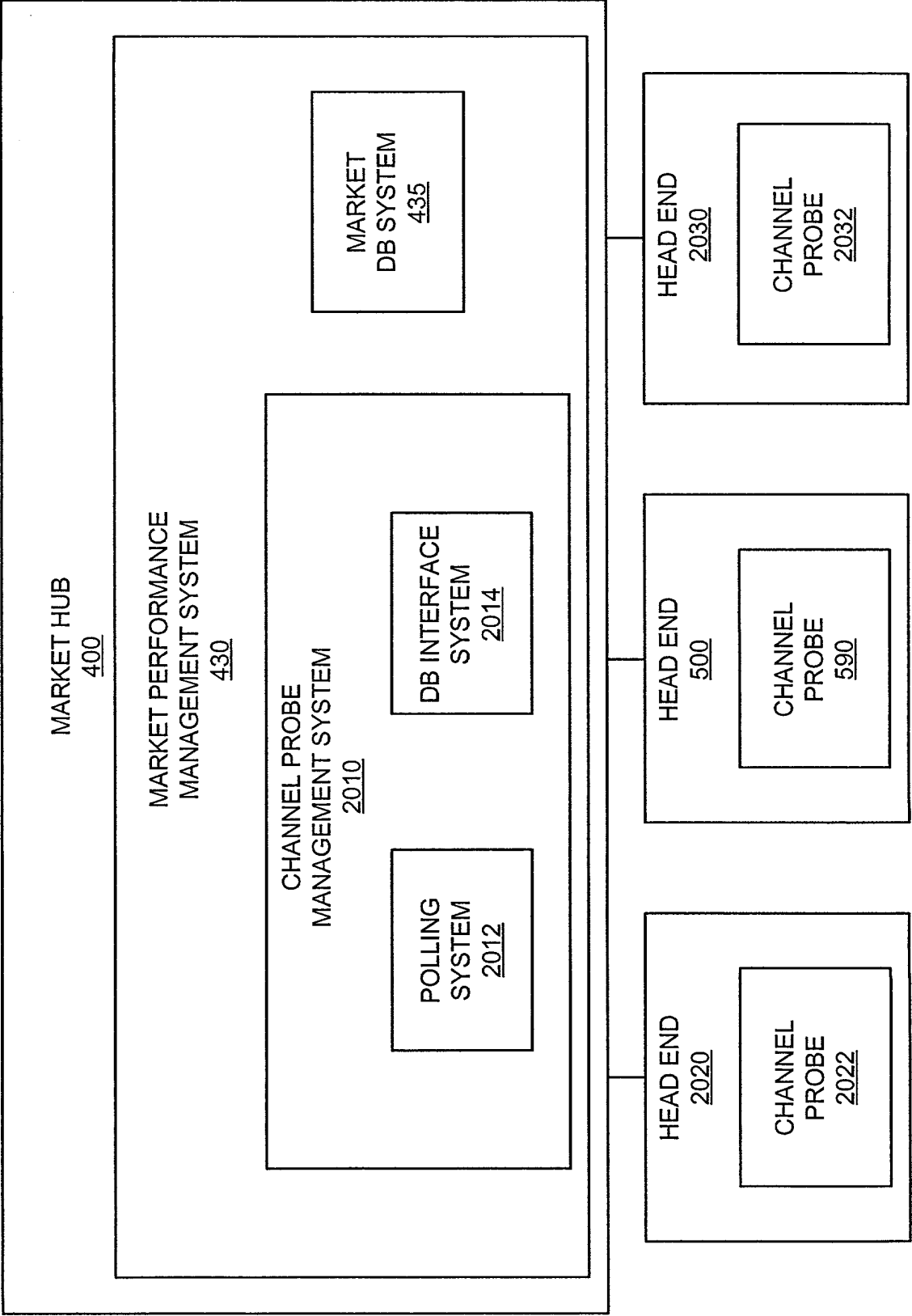


FIG. 20

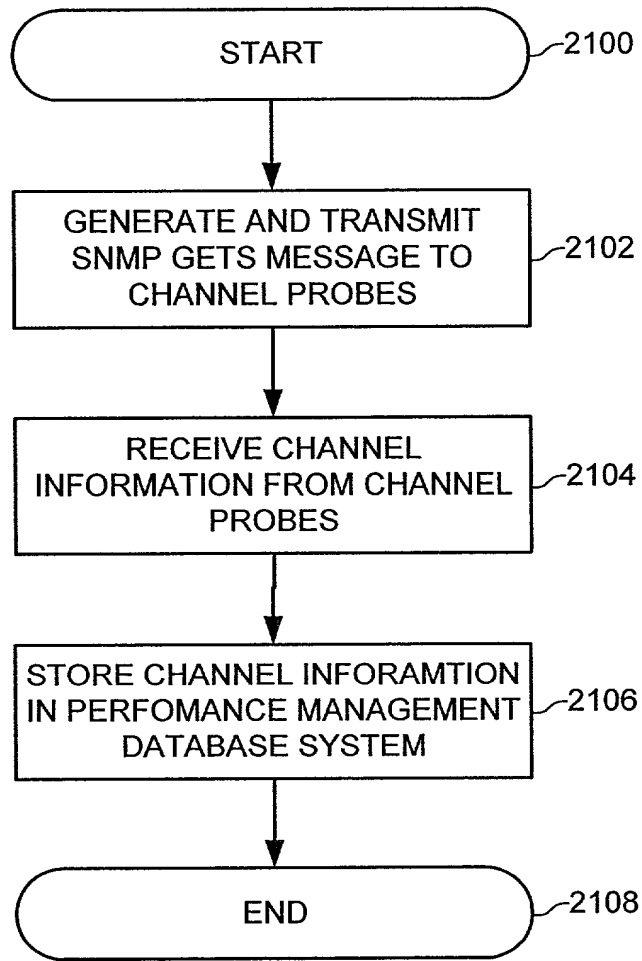


FIG. 21

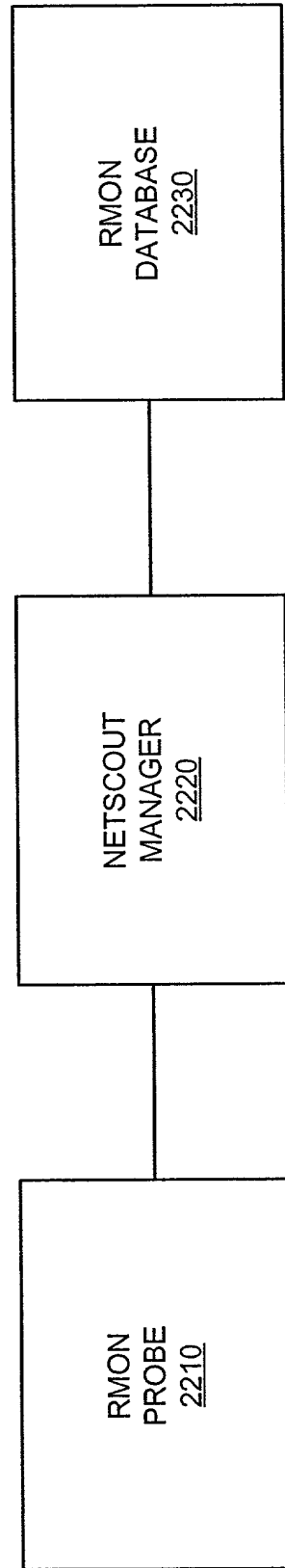


FIG. 22  
PRIOR ART

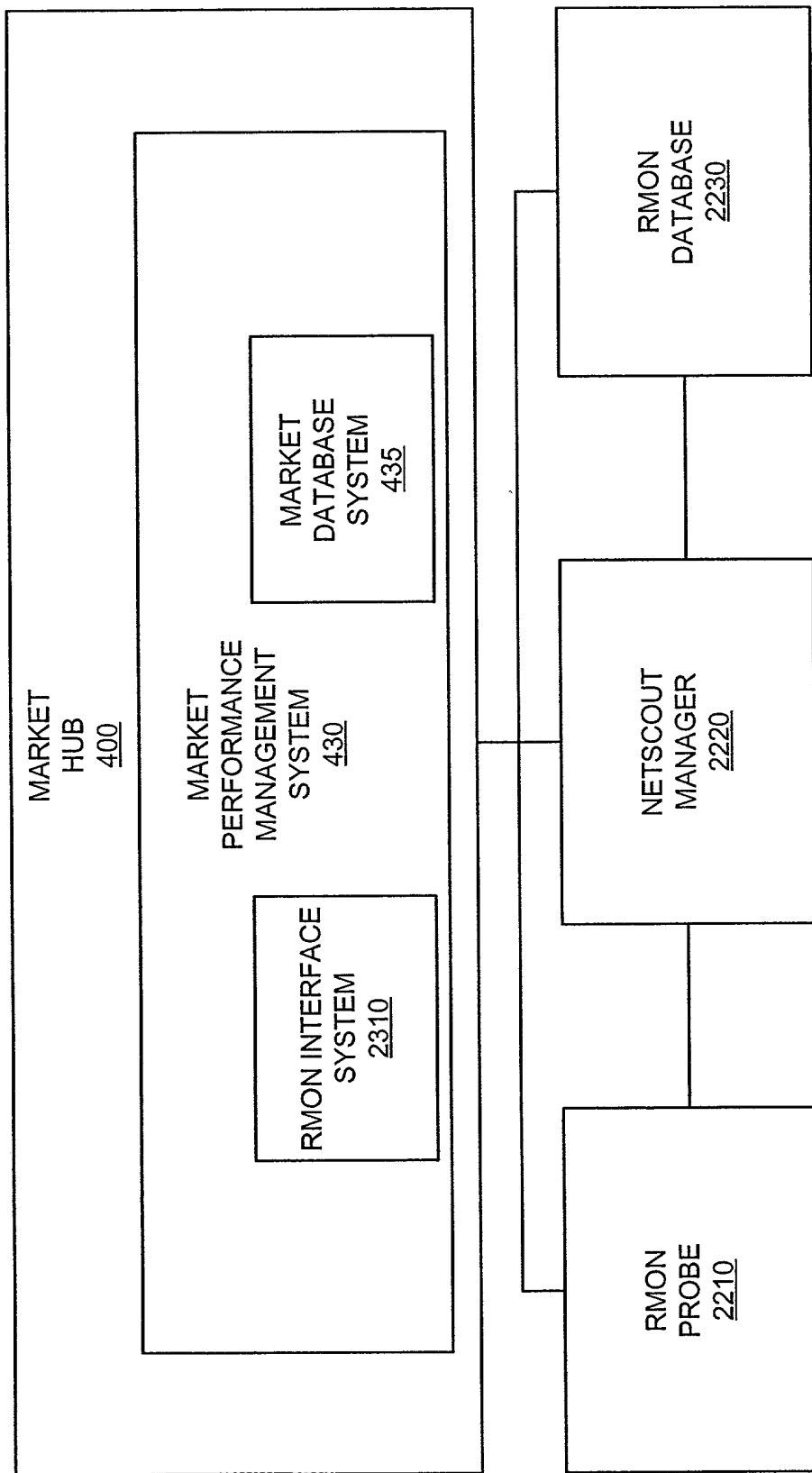


FIG. 23

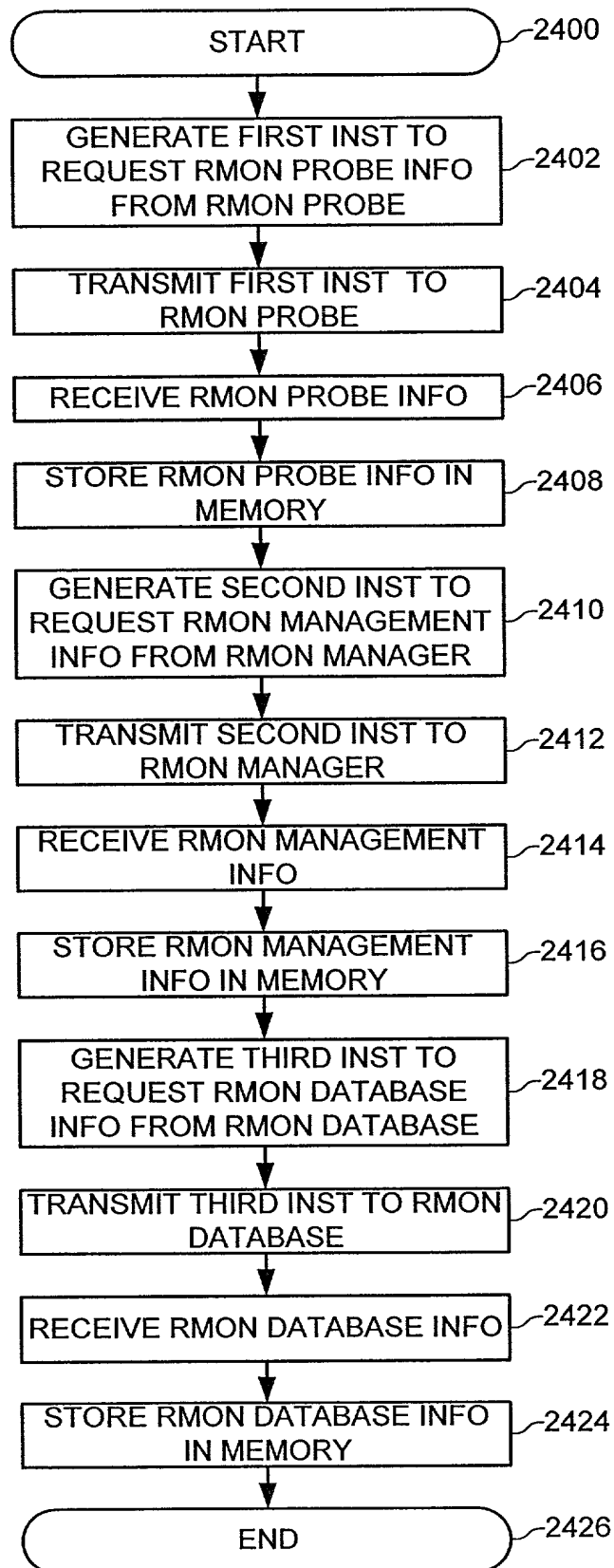


FIG. 24



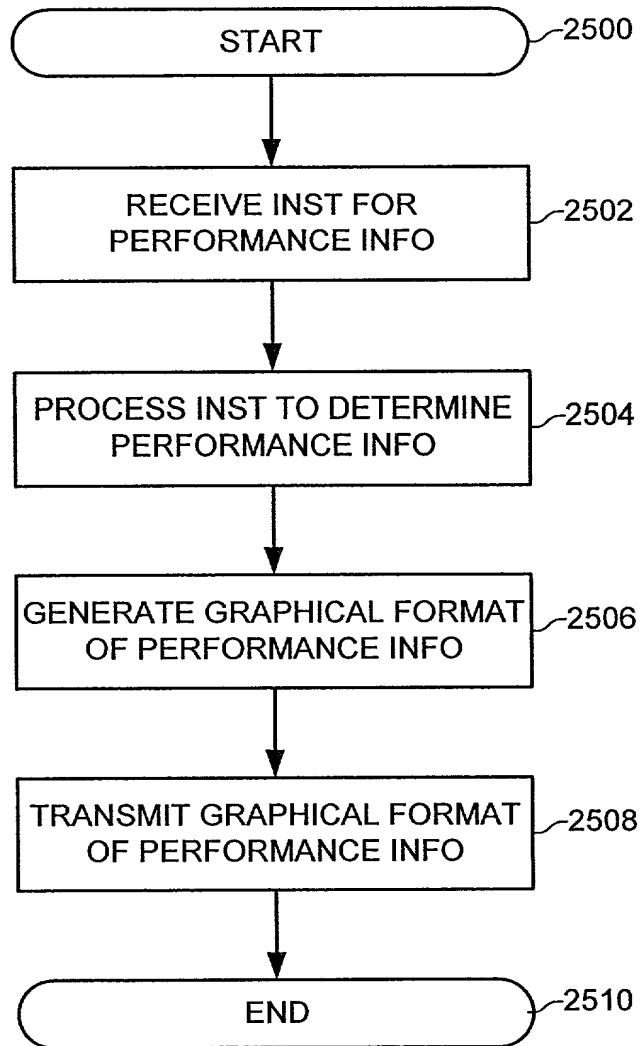


FIG. 25

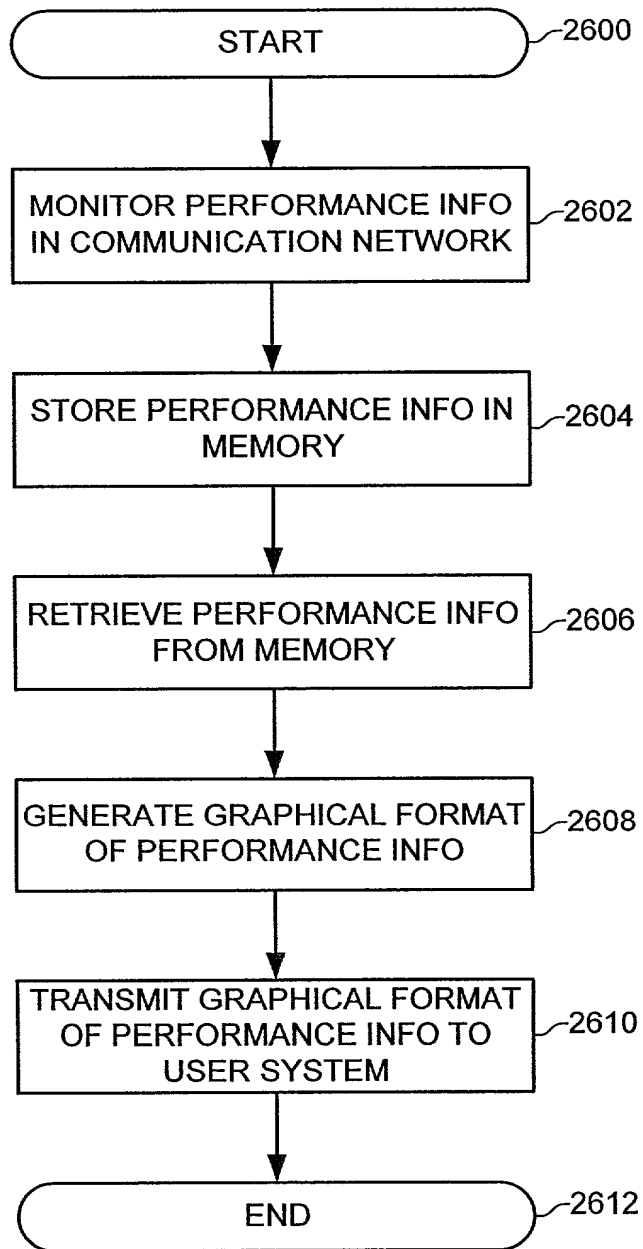


FIG. 26

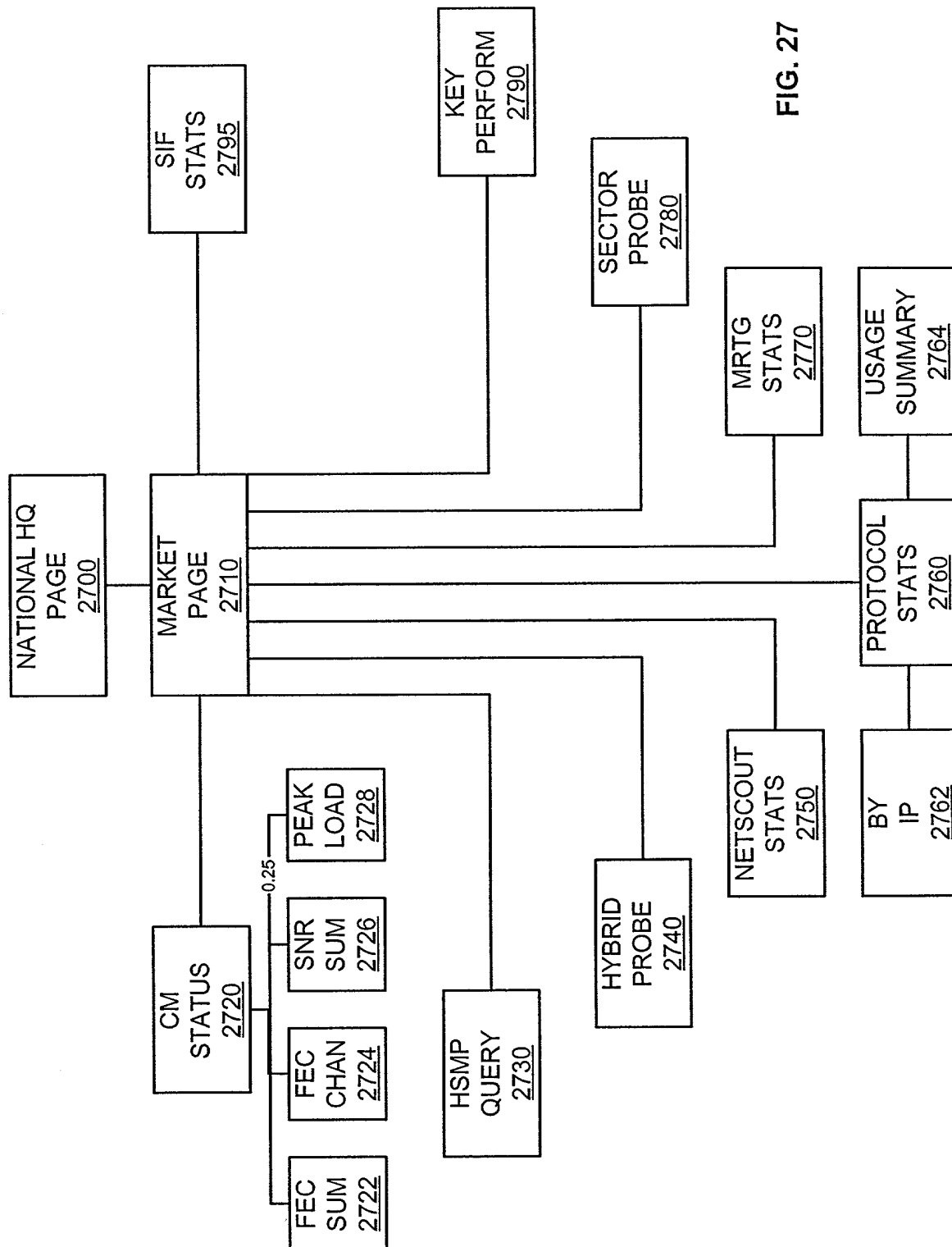


FIG. 27

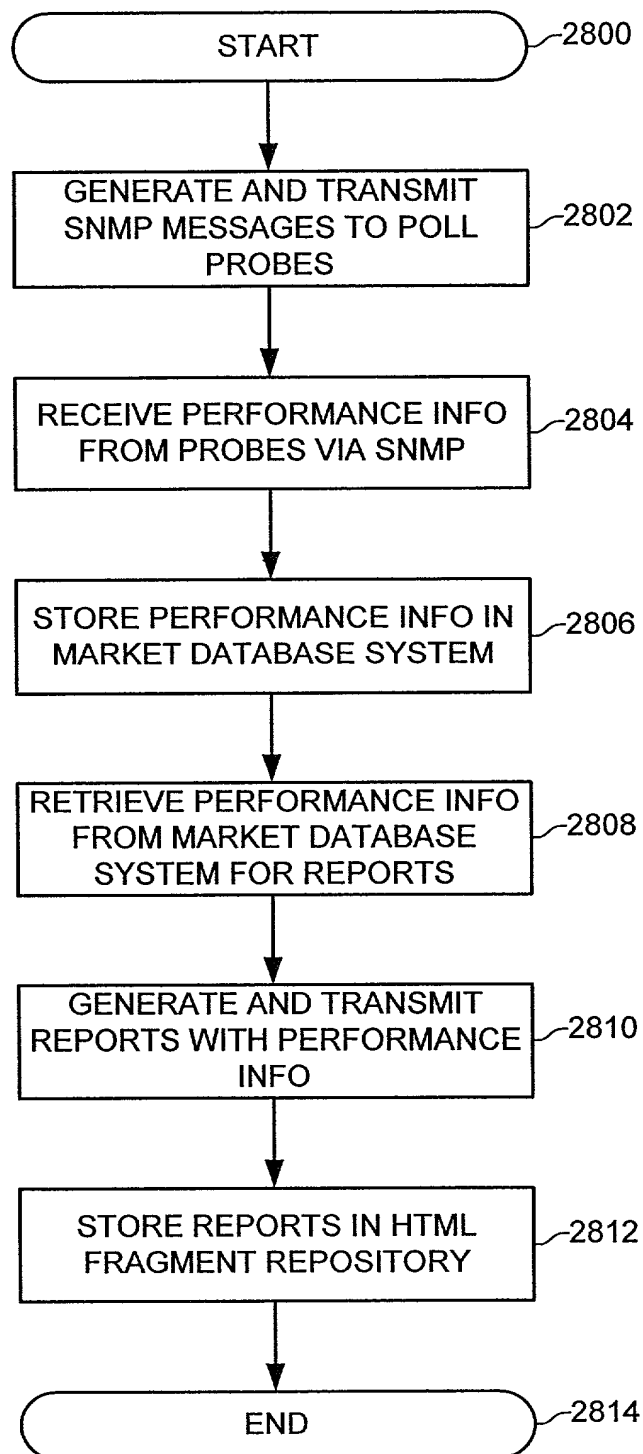


FIG. 28

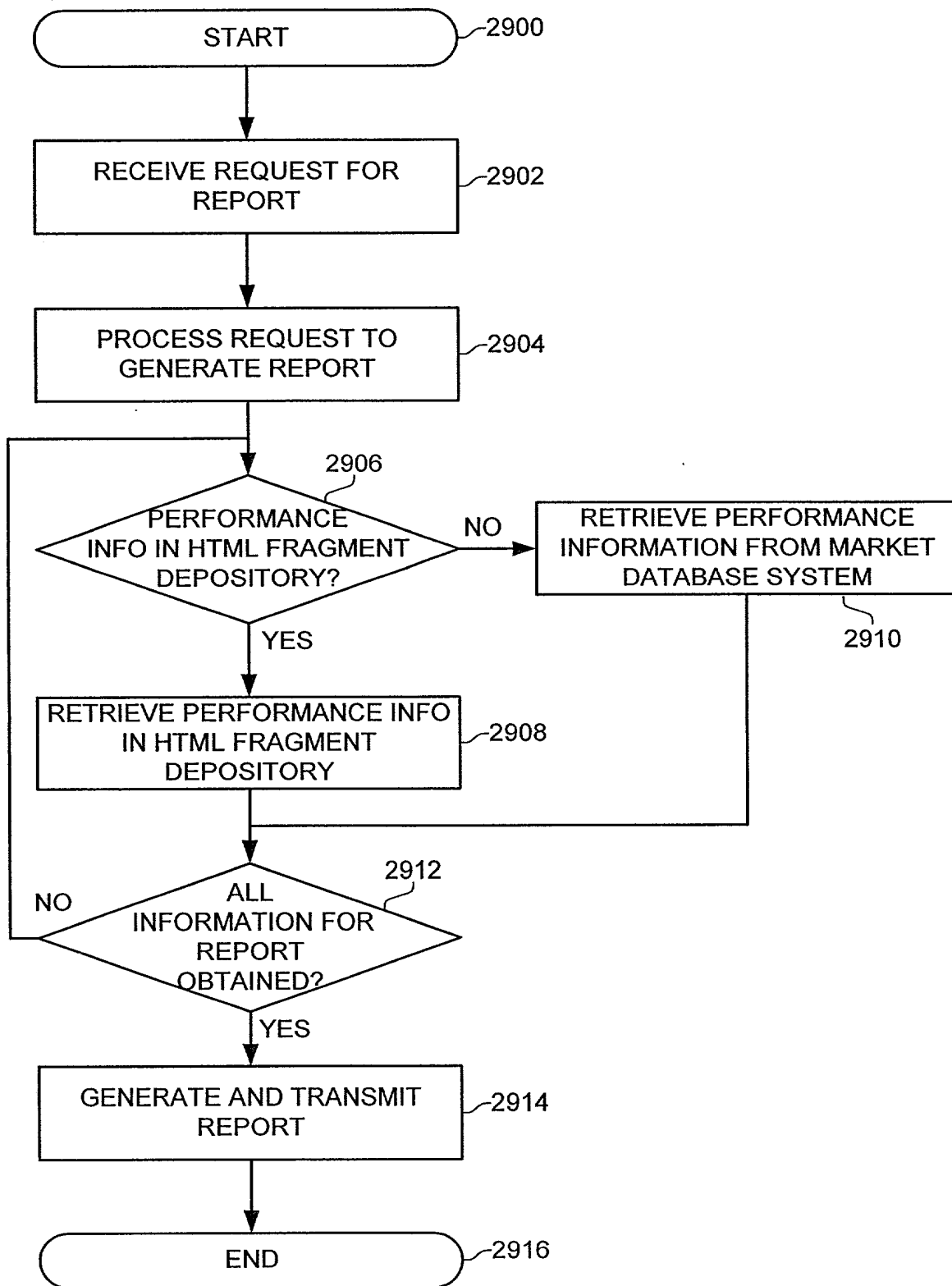


FIG. 29

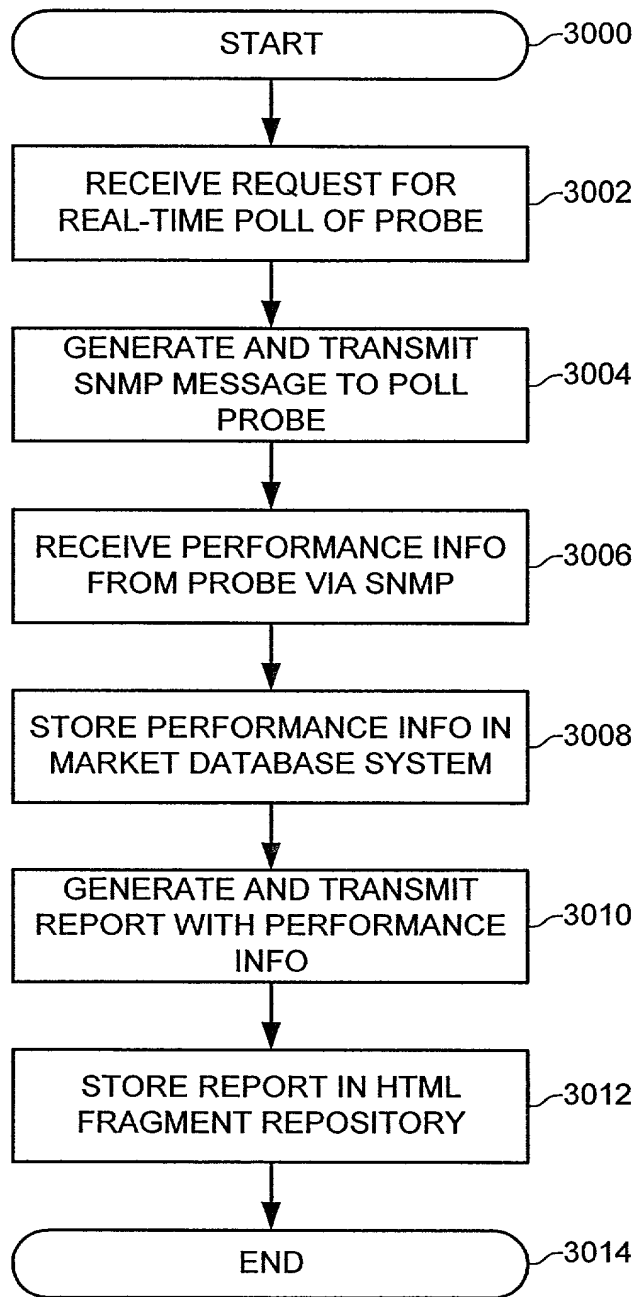


FIG. 30

205220" 22678660

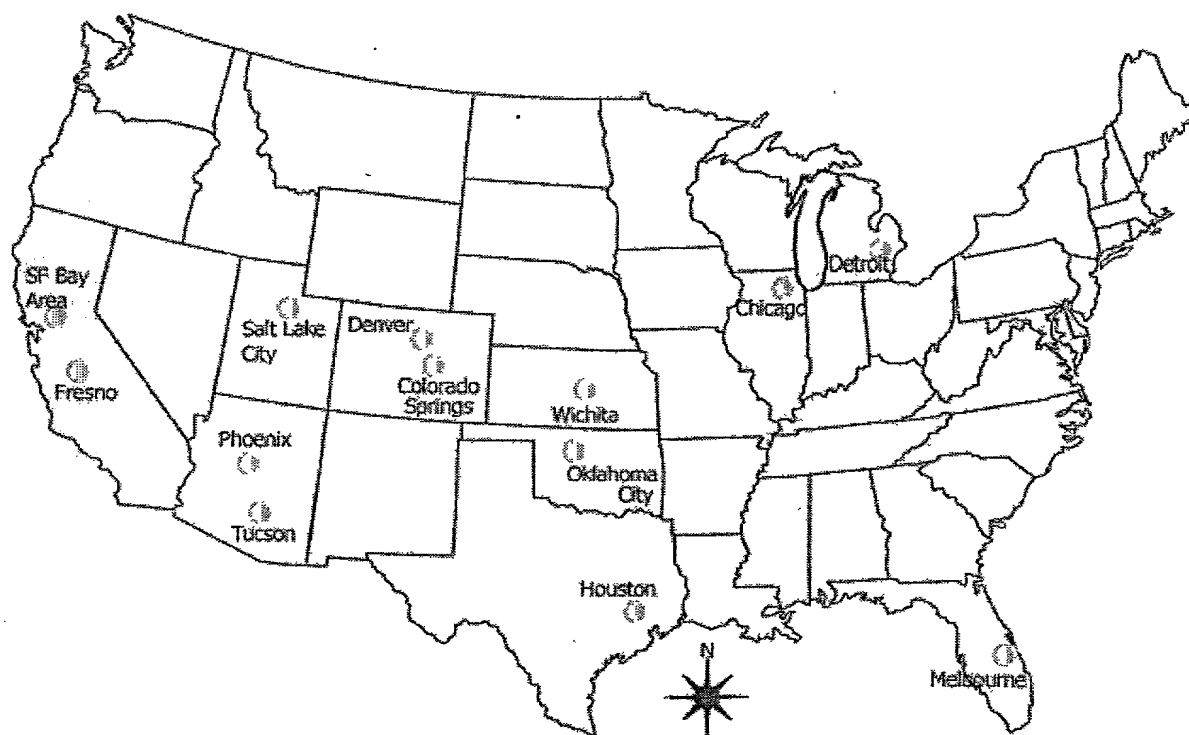


FIG. 31



**WELCOME TO VERTEX!** To navigate this site, links are located in the gray box below the thick red line. Inside the thick red line you will find a selection of categories to choose from. Click on one of these categories to display it's related links, then click on the link you want and you are there. One special note. The 'Markets' links will take you to the same report you are currently at, in the market you choose.

**Questions?:** Click on the button named 'HELP' in the upper right-hand corner.

Visibility into the network is a primary concern of the Vertex team. It is the job of the network management architecture to enable this visibility. Without it, the network cannot be effectively run: faults cannot be located and corrected, capacity planning cannot be done, and progressive problems cannot be found and stopped from reaching a critical stage until it is too late.

The architecture is divided up into three parts: collectors (also known as 'probes'), data warehouses, and reporting tools. Collectors include devices such as the NetScout RMON probe and two in-house engineered probes, the Hybrid Probe and the Sector Probe. Data warehouses consist of Oracle databases residing on Market and National Vertex Servers. These databases run on Sun Microsystems UNIX workstations that have RAID mass storage systems built in. The reporting tools are primarily the web-based tools hosted by the Market VERTEX Servers.

**FIG. 32**



# User/Channel Distribution by Sector

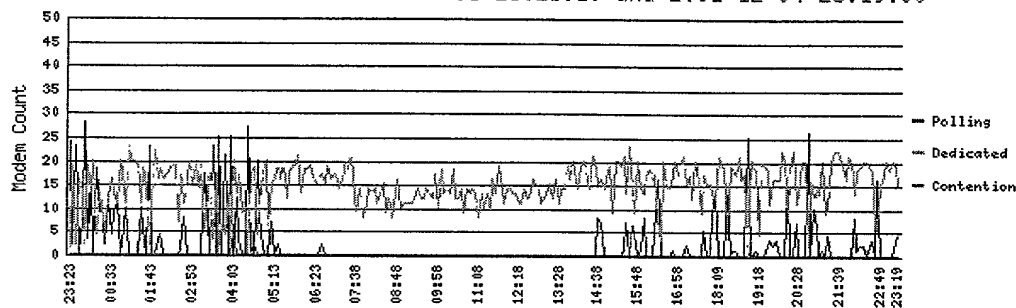
## Load and Capacity for All Sectors.

Enter Query Date in YYYYMMDD format:

### Sector sb-035

Click on the summary for detailed graphs.

Sector sb-035 between 2001-12-03 23:23:10 and 2001-12-04 23:19:00

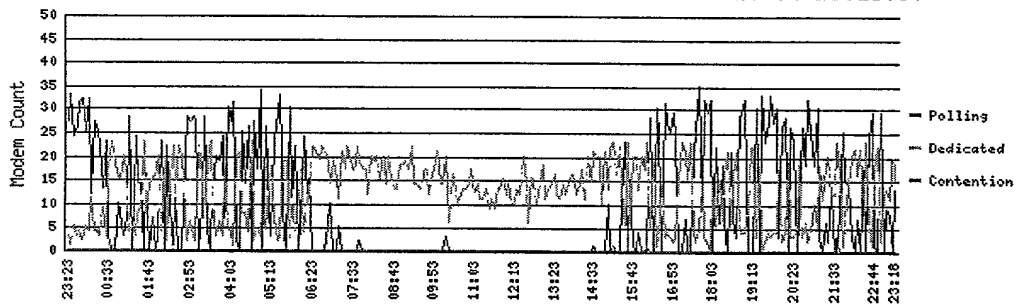


[\[FEC Summary\]](#) [\[FEC Channel\]](#) [\[SNR Summary\]](#) [\[Peak Load/Capacity: 52 %\]](#)

### Sector sb-083

Click on the summary for detailed graphs.

Sector sb-083 between 2001-12-03 23:23:08 and 2001-12-04 23:18:57



[\[FEC Summary\]](#) [\[FEC Channel\]](#) [\[SNR Summary\]](#) [\[Peak Load/Capacity: 56 %\]](#)

### Sector sb203-32

Click on the summary for detailed graphs.

FIG. 33

## FEC Summary Graph for sb-035

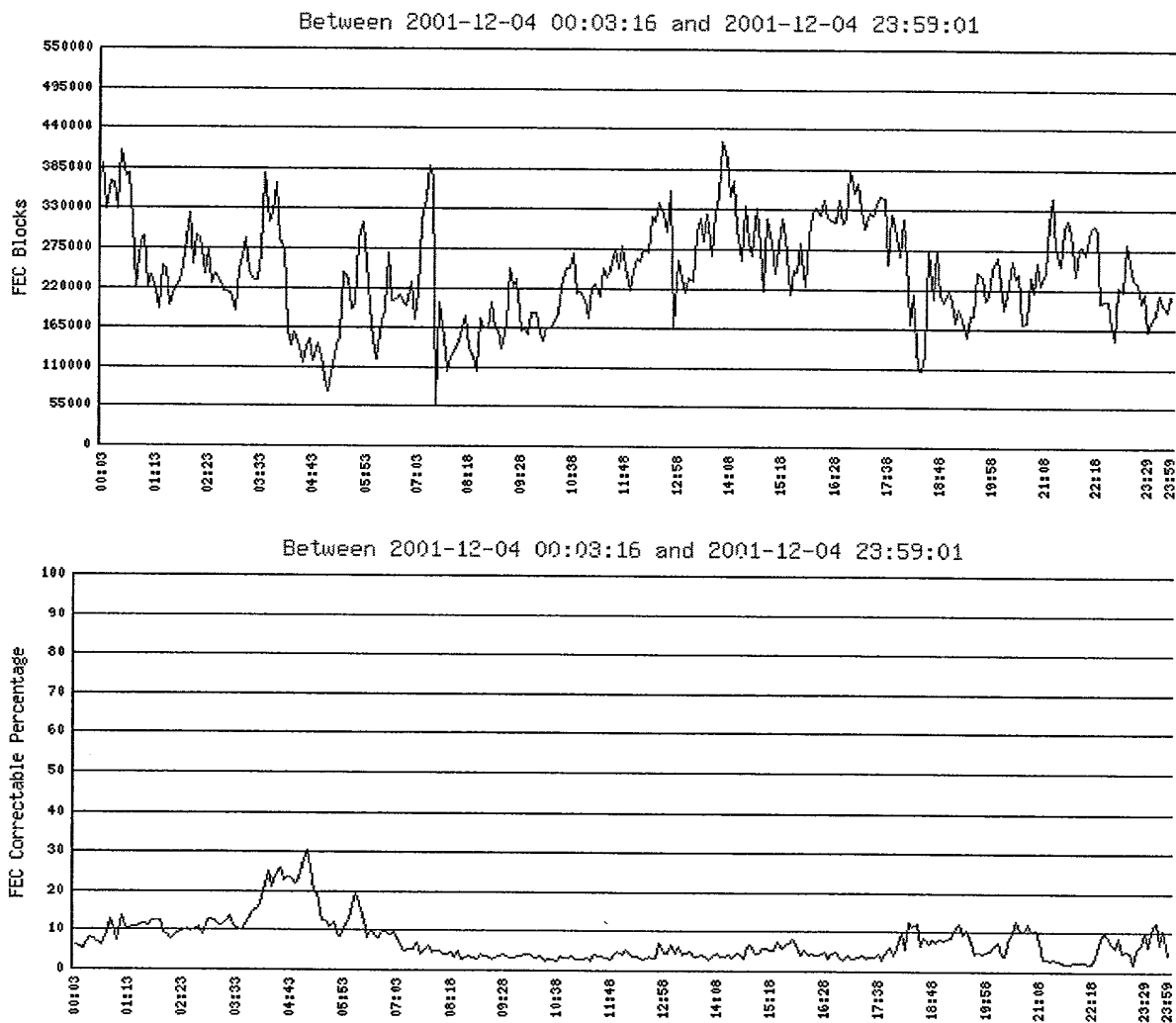


FIG. 34

## Channel detail graph for sb203-32 channel 2

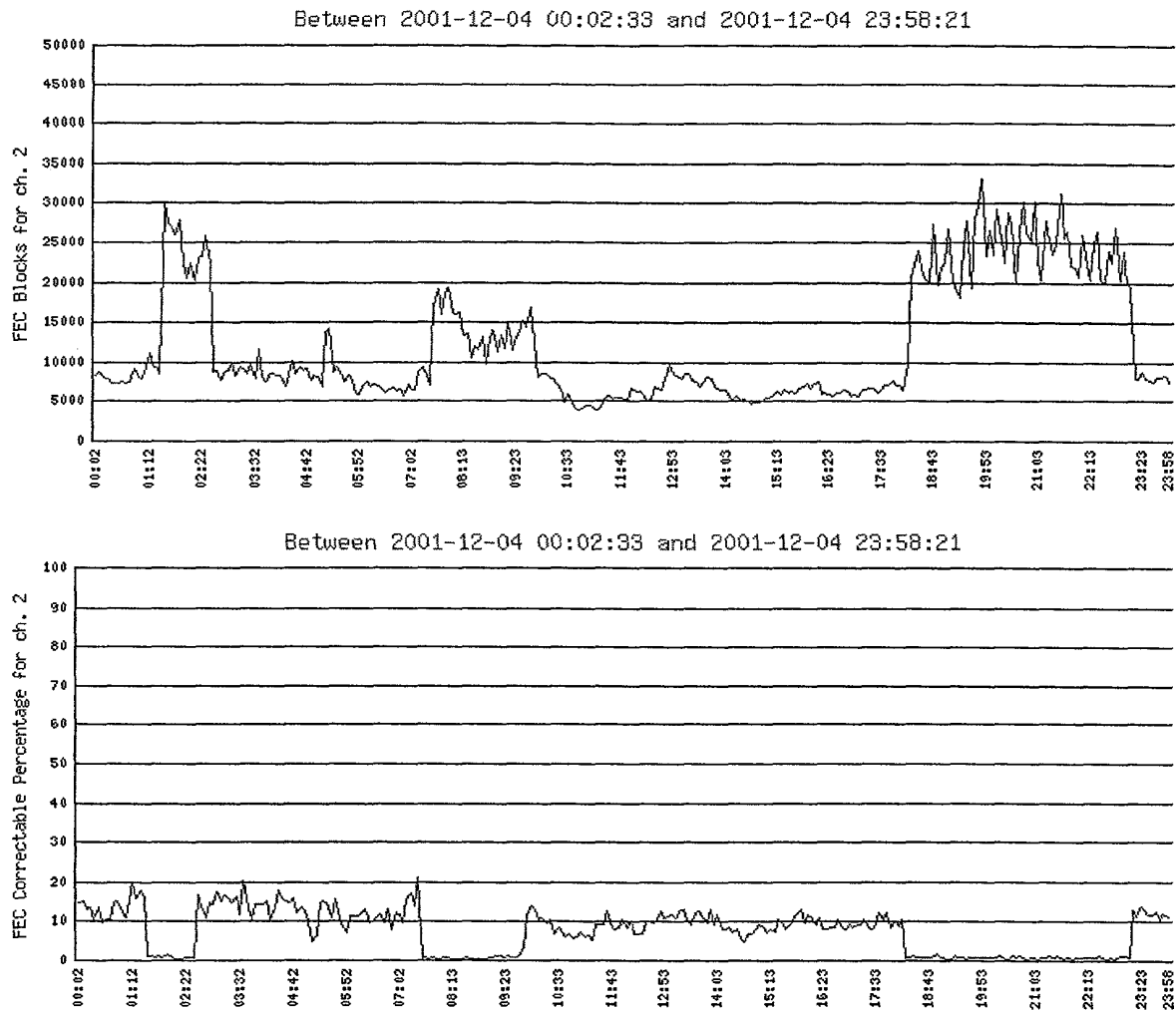


FIG. 35

# Signal to Noise graph for sb203-32

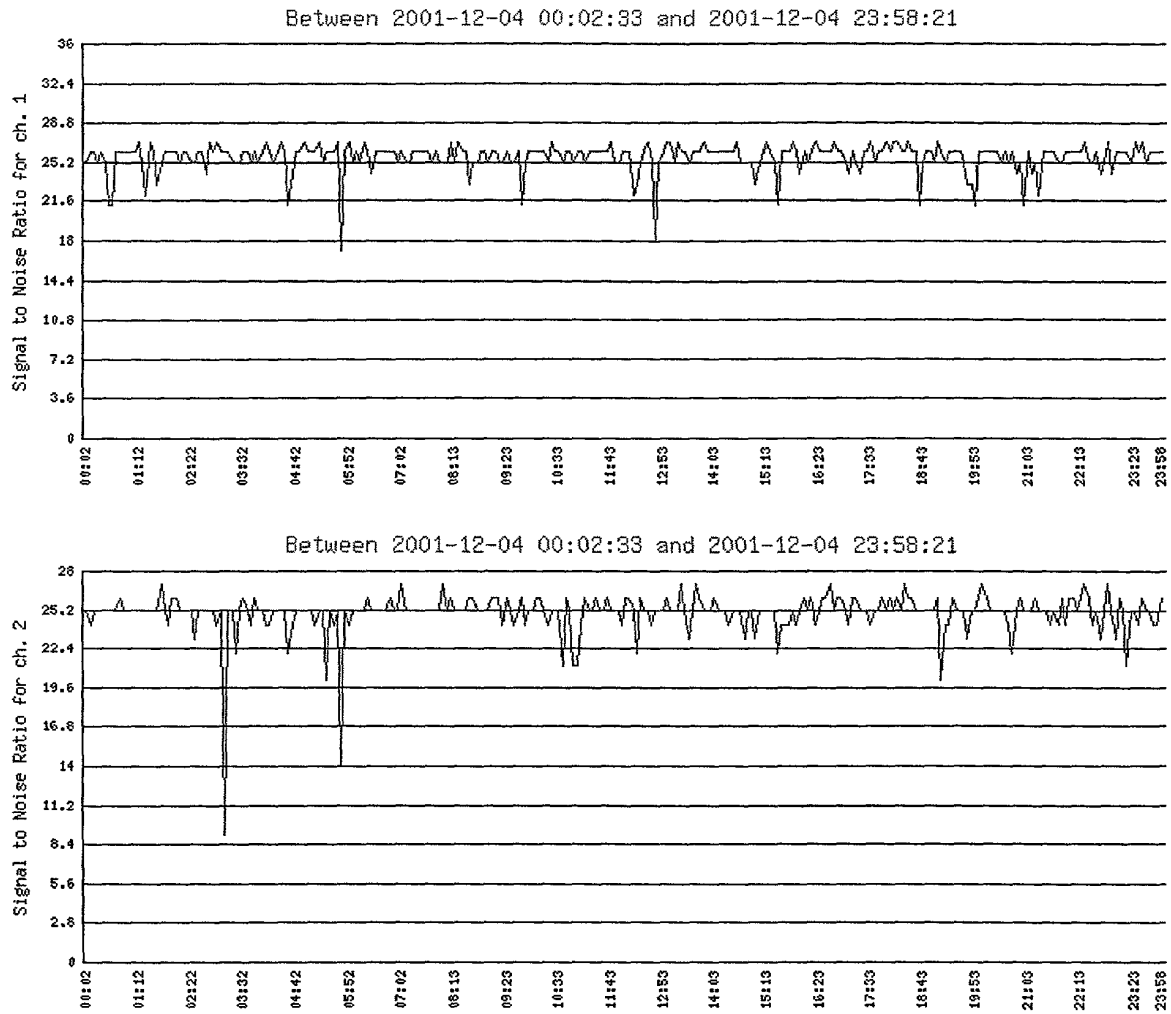


FIG. 36

# Load and Capacity

**Load:** If the number of dedicated channels exceeds 50% of the total number of channels,  $\text{Load} = (\text{poll} + \text{ded} + \text{con}) * 1.1$  else  $\text{Load} = [(\text{ded} * 8) + (\text{poll})] * [1 + \text{Con}/(\text{poll} + \text{ded})]$ . **ded:** Number of dedicated modems, **poll:** Number of polling modems, and **con:** Number of contention modems.  
**Capacity:** (Number of channels - 1) \* 8.

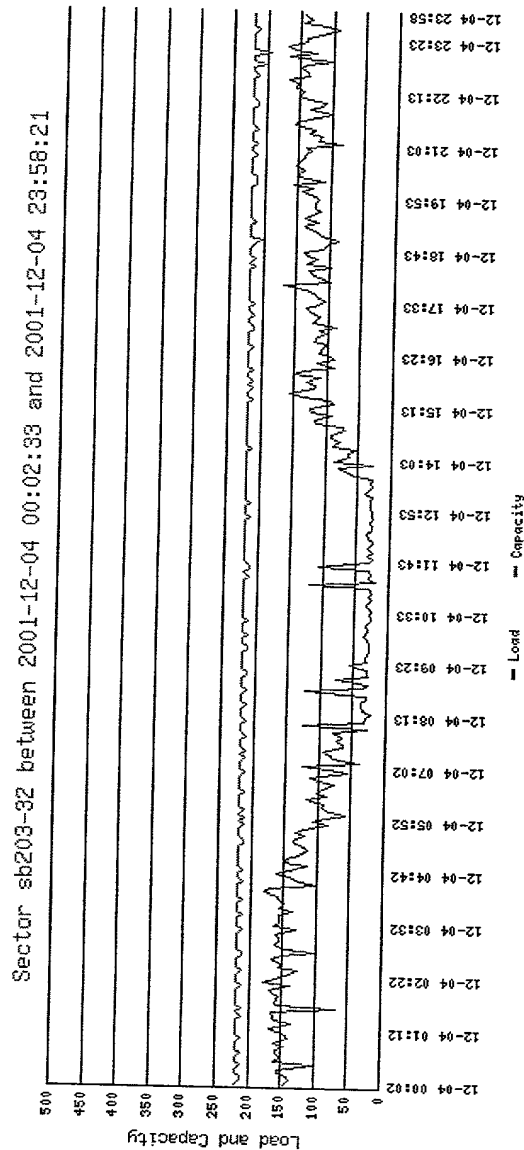


FIG. 37

HSMP Gateway	
Access Level	BWG Engineer
IP Address e.g, 24.221.13.83	<input type="text"/> <i>Note:</i> Enter a customer/WBR IP address <b>-OR-</b> a UUID
UUID e.g, 149219	<input type="text"/> <i>Note:</i> Enter the WBR's MAC address, per Merlin
Query Type	<p><input checked="" type="radio"/> Standard queries:</p> <div> <div>hybs</div> <div> qpsk tstat  qpsk stat  qpsk gdump  qams  hostname  hybs so0  hybs so1 </div> </div> <p>(Hold down the 'CTRL' key to select multiple queries)</p> <p><input type="radio"/> Custom query: <input type="text"/></p> <p><i>Note:</i> Only administrators can perform custom queries and only supervisors/leads can send <i>ginit</i>, <i>rngpwr</i>, and <i>exit</i> commands.</p>
<input type="button" value="Submit Request(s)"/>	
<p><b>Warning:</b> This could take up to 30 seconds per query; please be patient</p>	

FIG. 38

# Hybrid Probe - Phoenix

Start date: 12-11-00 Start time: 00:00:00

End date: 12-11-00 End time: 21:34:07

Number of entries: 10

CSV Format ☐

Get Results

Start time: 12-11-00 00:00:00 GMT

End time: 12-11-00 21:34:07 GMT

Currently: 12-11-00 21:34:25 GMT

IP Address	Active - %	Ratio	Poll - Timer	Ded - Timer	Poll - Tx bytes	Ratio	Ded - Tx bytes	Ratio	Index	Ratio
Total (all)	N/A	N/A	0:0:0:0:0	0:0:0:0:0	N/A	N/A	N/A	N/A		N/A
Average (all)	N/A	N/A	0:0:0:0:1	0:0:0:0:1	N/A	N/A	N/A	N/A	1	N/A

FIG. 39

## Top Talkers

Total Users = 476

Total number of upstream bytes for all users = 37959.79 MB

Total number of downstream bytes for all users = 78291.14 MB

Average number of upstream bytes per user = 79.75 MB

Average number of downstream bytes per user = 164.48 MB

Date Range Searched: From 2001-12-04 00:00:00 to 2001-12-04 23:59:59

CMID	Up MB	% of Total	Information	CMID	Down MB	% of Total	Information
10113995201	1396.48	3.68	<a href="#">Info</a> <a href="#">Detail</a>	10033145001	4495.26	5.74	<a href="#">Info</a> <a href="#">Detail</a>
10300017795	1252.04	3.30	<a href="#">Info</a> <a href="#">Detail</a>	10113995201	3860.84	4.93	<a href="#">Info</a> <a href="#">Detail</a>
10045700301	1185.84	3.12	<a href="#">Info</a> <a href="#">Detail</a>	10300015592	2941.91	3.76	<a href="#">Info</a> <a href="#">Detail</a>
10043134301	1074.78	2.83	<a href="#">Info</a> <a href="#">Detail</a>	10046161801	2854.52	3.65	<a href="#">Info</a> <a href="#">Detail</a>
10300024189	952.64	2.51	<a href="#">Info</a> <a href="#">Detail</a>	10300036933	2353.44	3.01	<a href="#">Info</a> <a href="#">Detail</a>
10045370901	945.70	2.49	<a href="#">Info</a> <a href="#">Detail</a>	10300026883	1907.78	2.44	<a href="#">Info</a> <a href="#">Detail</a>
10060649801	876.35	2.31	<a href="#">Info</a> <a href="#">Detail</a>	10300049340	1602.27	2.05	<a href="#">Info</a> <a href="#">Detail</a>
10300049099	861.39	2.27	<a href="#">Info</a> <a href="#">Detail</a>	10043134301	1551.04	1.98	<a href="#">Info</a> <a href="#">Detail</a>
10048528301	849.71	2.24	<a href="#">Info</a> <a href="#">Detail</a>	10026884901	1520.79	1.94	<a href="#">Info</a> <a href="#">Detail</a>
10300042276	835.36	2.20	<a href="#">Info</a> <a href="#">Detail</a>	10063273601	1520.67	1.94	<a href="#">Info</a> <a href="#">Detail</a>
10041614401	779.71	2.05	<a href="#">Info</a> <a href="#">Detail</a>	10113986301	1489.38	1.90	<a href="#">Info</a> <a href="#">Detail</a>
10080408901	746.92	1.97	<a href="#">Info</a> <a href="#">Detail</a>	10300033843	1435.02	1.83	<a href="#">Info</a> <a href="#">Detail</a>
10300014579	727.49	1.92	<a href="#">Info</a> <a href="#">Detail</a>	10045370901	1430.11	1.83	<a href="#">Info</a> <a href="#">Detail</a>
10300039579	702.54	1.85	<a href="#">Info</a> <a href="#">Detail</a>	10063207801	1381.60	1.76	<a href="#">Info</a> <a href="#">Detail</a>
10044769601	660.30	1.74	<a href="#">Info</a> <a href="#">Detail</a>	10300042788	1323.12	1.69	<a href="#">Info</a> <a href="#">Detail</a>
10063484801	654.68	1.72	<a href="#">Info</a> <a href="#">Detail</a>	10045140201	1258.60	1.61	<a href="#">Info</a> <a href="#">Detail</a>
10300067076	635.97	1.68	<a href="#">Info</a> <a href="#">Detail</a>	10044181901	1210.90	1.55	<a href="#">Info</a> <a href="#">Detail</a>
10043370701	621.19	1.64	<a href="#">Info</a> <a href="#">Detail</a>	10113953301	1197.58	1.53	<a href="#">Info</a> <a href="#">Detail</a>
10300080498	604.89	1.59	<a href="#">Info</a> <a href="#">Detail</a>	10047055801	1122.13	1.43	<a href="#">Info</a> <a href="#">Detail</a>
10300013790	569.02	1.50	<a href="#">Info</a> <a href="#">Detail</a>	10040944301	1094.73	1.40	<a href="#">Info</a> <a href="#">Detail</a>

FIG. 40



## Detail Informaiton for CMID 10000002309

### Breakdown By Protocol

Protocol	Upstream Bytes	% of Total	Downstream Bytes	% of Total
HTTPS	437990	0	3649130	0
IP	1077630687	99	1089385948	99
Totals	1078068677		1093035078	

### Breakdown By IP Address

IP Address	Upstream Bytes	% of Total	Downstream Bytes	% of Total
24.221.206.66	1077630687	99	1089385948	99
24.221.206.71	437990	0	3649130	0
Totals	1078068677		1093035078	

### Breakdown of Protocols for IP Address 24.221.206.66

Protocol	Upstream Bytes	% of Total	Downstream Bytes	% of Total
IP	1077630687	100	1089385948	100
Totals	1077630687		1089385948	

FIG. 41

Statistics for Market ID 00000010, Market name = Phoenix (new)

Bad cmd's encountered = 0

Market ID	Date	HR	# of Subscribers	Mb Per Hour	Avg Per Subscriber	Avg MBPS	Peak # of MBPS
00000010	2000-12-12	00	000003	000000054.53	001817.00	000000.01	000000026.01
00000010	2000-12-12	01	000003	000000158.73	005291.00	000000.04	000000118.64
00000010	2000-12-12	02	000002	000000187.85	009392.00	000000.05	000000102.37
00000010	2000-12-12	08	000001	000000055.31	005531.00	000000.01	000000055.31
00000010	2000-12-12	10	000004	000000140.21	003505.00	000000.03	000000084.61
00000010	2000-12-12	11	000001	000000008.07	000807.00	000000.00	000000008.07
00000010	2000-12-12	12	000004	000000024.41	000610.00	000000.00	000000013.55
00000010	2000-12-12	13	000001	000000002.41	000241.00	000000.00	000000002.41
00000010	2000-12-12	15	000001	000000008.83	000883.00	000000.00	000000008.83
00000010	2000-12-12	17	000001	000000001.28	000128.00	000000.00	000000001.28
00000010	2000-12-12	19	000001	000000025.82	002582.00	000000.00	000000025.82
00000010	2000-12-12	20	000001	000000024.97	002497.00	000000.00	000000024.97
00000010	2000-12-12	21	000001	000000023.37	002337.00	000000.00	000000023.37

Statistics for udfg id 526, udfg name = south mtn 101-32/36

Total subscribers in SIF: 110

Udfg ID	Date	HR	Active Subscribers	MegaBits Per Hour	Avg Per Subscriber Per Second	Peak # of MBPS
526	2000-12-11	00	3	34.30	19.10	27.21
526	2000-12-11	01	5	541.81	180.181	388.12
526	2000-12-11	02	2	128.5	10.85	73.6
526	2000-12-11	03	5	761.39	253.239	731.53
526	2000-12-11	04	2	6.14	5.14	5.75
526	2000-12-11	05	5	442.1	14.221	403.91
526	2000-12-11	06	4	266.43	111.3	159.45
526	2000-12-11	07	2	2.99	2.59	1.94
526	2000-12-11	08	2	486.33	405.33	363.5
526	2000-12-11	09	4	312.11	130.11	221.18
526	2000-12-11	10	3	1111.96	617.136	797.57
526	2000-12-11	11	3	49.74	27.114	27.77
526	2000-12-11	12	4	50.63	21.23	41.30
526	2000-12-11	13	3	281.76	156.96	204.44
526	2000-12-11	14	6	598.4	16.224	319.80
526	2000-12-11	15	3	778.66	432.106	525.49
526	2000-12-11	16	3	12.77	7.17	11.60
526	2000-12-11	17	2	27.20	22.80	26.46
526	2000-12-11	18	5	14.80	4.280	6.12
526	2000-12-11	19	1	1.90	3.10	1.90
526	2000-12-11	20	5	44.86	14.286	35.99

FIG. 42

# Detail for IP nnn nnn nnn from to 2000-12-12 23:59:59

This is a protocol breakdown for traffic from this IP address. This includes all protocol types, including all TCP and UDP protocols. Two special protocols, TCP~ and UDP~, correspond to "unknown TCP protocol" and "unknown UDP protocol". This means that we don't really know what kind of traffic it is at this point.

Protocol	Downstream KBytes	Upstream KBytes
----------	-------------------	-----------------

## Totals: Protocol Summary - 2000-12-12 00:00:00 to 2000-12-12 23:59:59

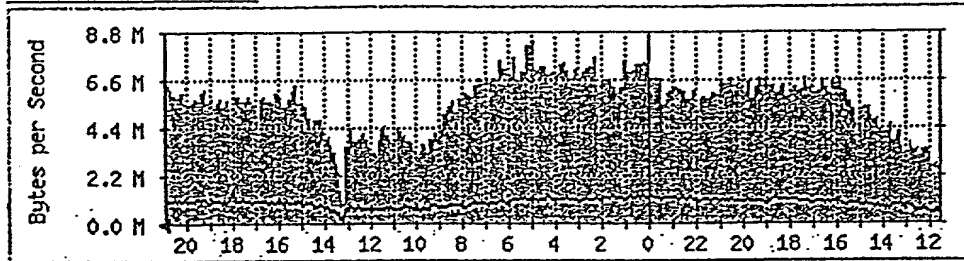
Up: Kbytes This is a list of the most popular protocols on our network for the chosen date range. Measurements are in Megabytes and the da  
Down: Kbytes range is inclusive. Again, TCP~ and UDP~ represent "other" TCP and UDP apps which have not yet been identified.

Protocol Name	Megabytes Transferred
NNIP	60997.67
TCP~	20632.16
NAPSTER	10798.85
FTP-DATA	8756.72
HTTP	6938.55
UDP~	3909.48
HTTPS	1215.48
POP3	571.60
AOL	183.04
FTP-CTRL	12.31
REALAUD	10.20
TELNET	8.48
SOCKET	6.92
SQLNET_N	4.31
SUNRPC_T	0.10
COMPUSRV	0.04

FIG. 43

## Router Traffic Analysis Daily Graph (5 Minute Average)

### FastEthernet5/0/0

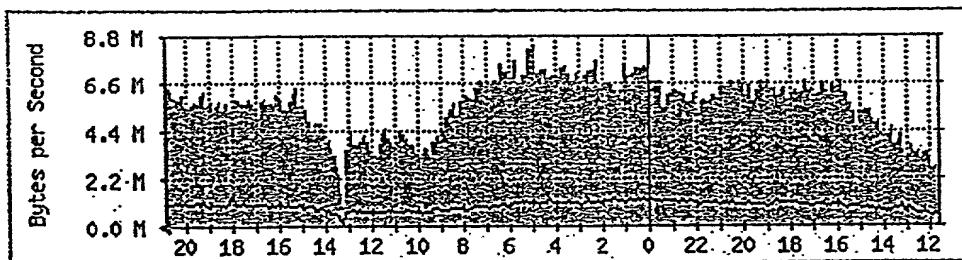


## Traffic Analysis for FastEthernet5/0/0 edge01.phoenix.speedchoice.com

System: edge01.phoenix.speedchoice.com in  
Maintainer:  
Description: FastEthernet5/0/0  
ifType: ethernetCsmacd (6)  
ifName: Fa5/0/0  
Max Speed: 12.5 MBytes/s  
Ip: 207.240.93.202 (edge01)

The statistics were last updated Friday, 15 December 2000 at 21:00,  
at which time 'edge01.phoenix.speedchoice.com' had been up for 84 days, 10:51:32.

### 'Daily' Graph (5 Minute Average)

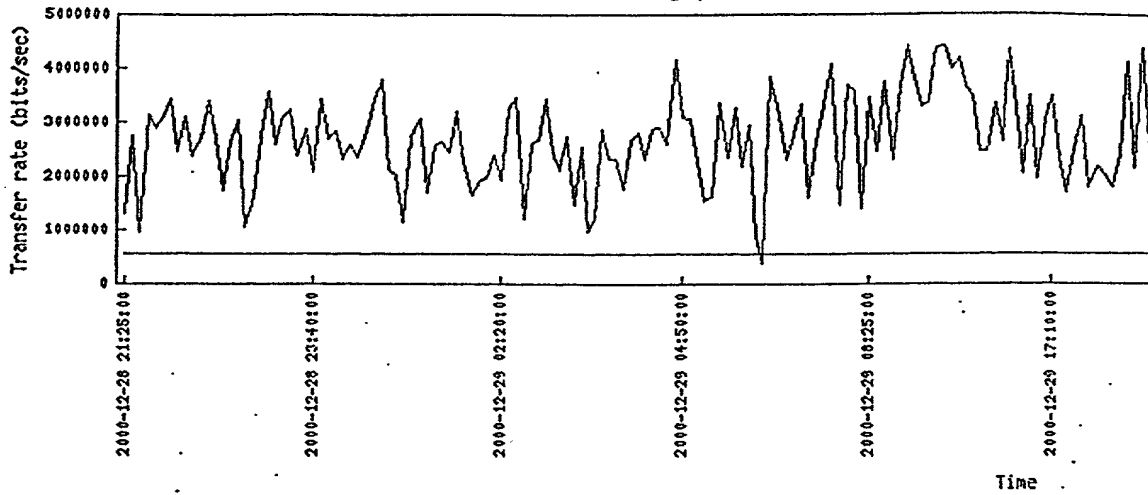


Max In: 8409.8 kB/s (67.3%) Average In: 5645.1 kB/s (45.2%) Current In: 6166.0 kB/s (49.3%)  
Max Out: 1446.9 kB/s (11.6%) Average Out: 944.8 kB/s (7.6%) Current Out: 1017.5 kB/s (8.1%)

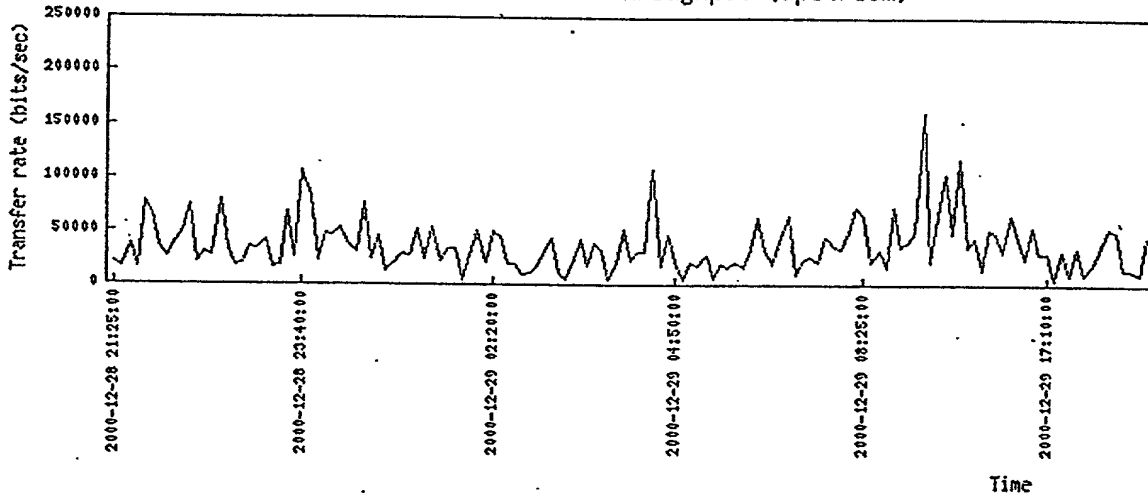
FIG. 44

# Sector sm102-32

## Data Throughput (downstream)



## Data Throughput (upstream)



## Web Site Throughput (downstream)

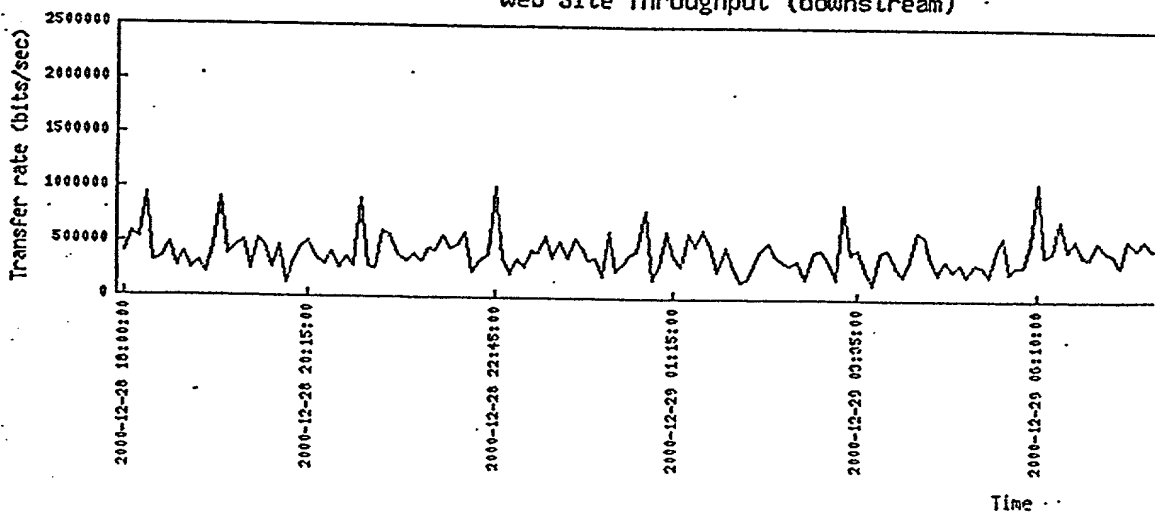


FIG. 45

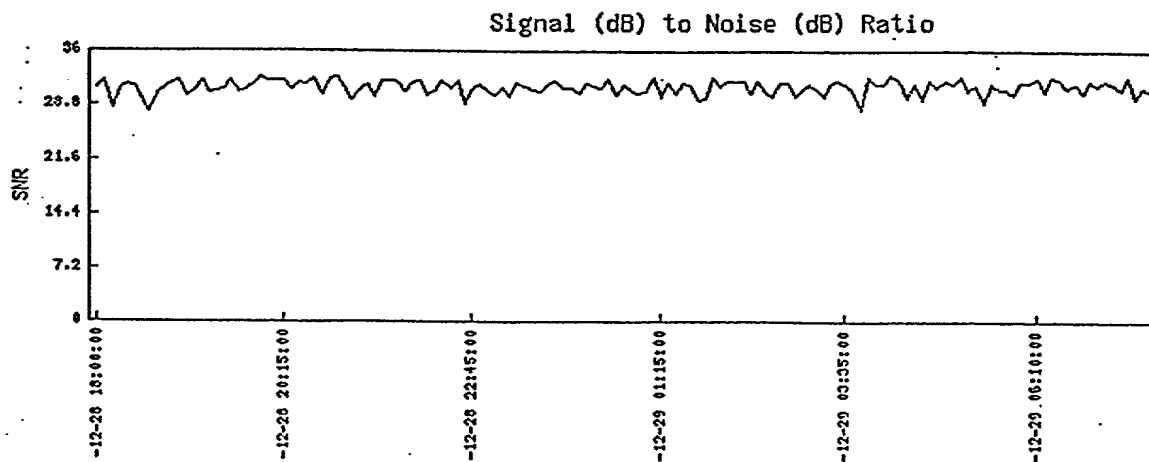
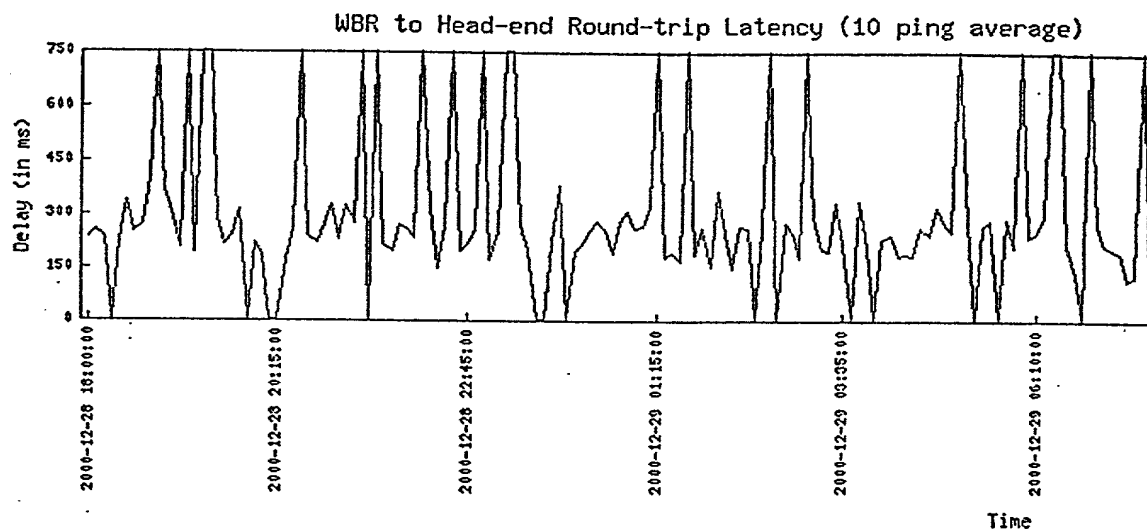
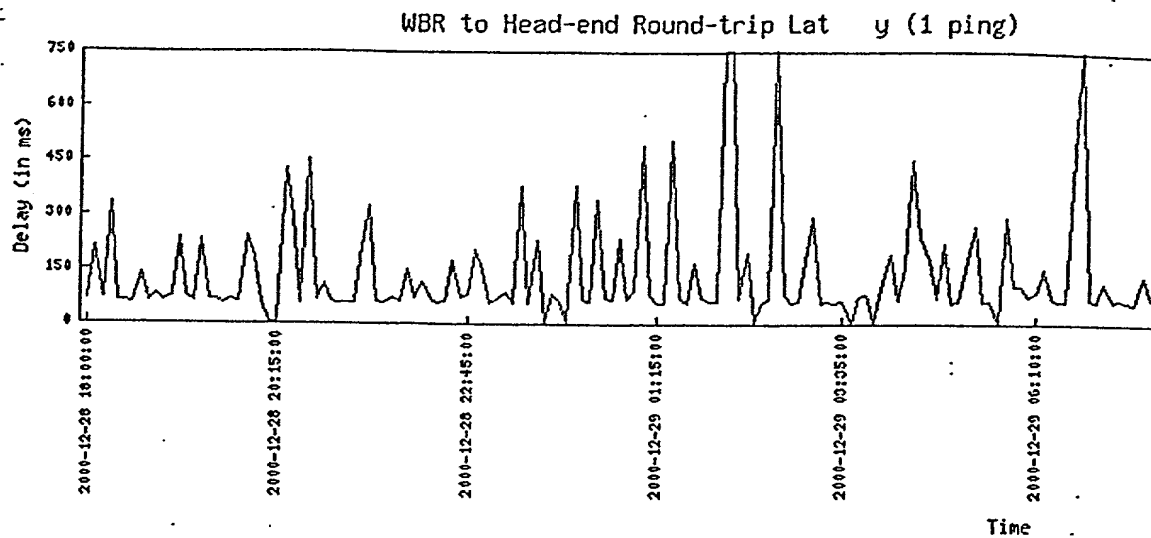


FIG. 46

09981971-032500

Peak Time: 2000-12-28 12:25:00 CST			
Peak Active Modems	Sampled Modems		Activity Ratio
905	7115		12.72%
Modem Counts			
Contention	Polling	Dedicated	
0	847	58	
Off Peak Time: 2000-12-28 06:00:00 CST			
Off Peak Active Modems	Sampled Modems		Activity Ratio
152	7115		2.14%
Modem Counts			
Contention	Polling	Dedicated	
0	98	54	
Individual Peak Modem Counts			
Contention	Polling	Dedicated	
2000-12-28 12:55:00 CST	2000-12-28 12:25:00 CST	2000-12-28 05:45:00 CST	
10	847	88	
Avg. Time Spent Per User			
In Contention	In Polling	In Dedicated	
0.03 secs	0.71 secs	1.48 secs	
FTP Rates At Off Peak 2000-12-28 06:00:00 CST		FTP Rates At Peak 2000-12-28 12:25:00 CST	
Downstream 3.54 Mbps	Upstream 85.83 Kbps	Downstream 2.21 Mbps	Upstream 32.02 Kbps

FIG. 47a

Peak FTP Rate Downstream  
2000-12-28 07:20:00  
6.03 Mbps

Peak FTP Rate Upstream  
2000-12-28 07:20:00  
217.87 Kbps

2000-12-28 00:00:00 CST thru 2000-12-28 23:59:59 CST

Average FTP Rate Midnight-6pm (off peak)		Average FTP Rate 6pm-Midnight (peak)	
Downstream	Upstream	Downstream	Upstream
2.69 Mbps	51.31 Kbps	2.01 Mbps	38.27 Kbps

2000-12-28 00:00:00 CST thru 2000-12-28 23:59:59 CST

Average HTTP Rate Midnight-6pm (off peak)	Average HTTP Rate 6pm-Midnight (peak)
470.34 Kbps	384.46 Kbps

FEC  
Corrections  
32.55 : 1000

FEC  
Uncorrectables  
1.53 %

Available  
Channels

230

Max Functioning  
Channels

230

Min Functioning  
Channels

68

Avg Functioning  
Channels

226.44

Max Non-Functioning  
Channels

162

Min Non-Functioning  
Channels

0

Avg Non-Functioning  
Channels

3.56

Signal to Noise  
Ratio

24.93 : 1

Requested to Scheduled  
Modem Calibration Ratio

0.65 : 1

Downstream to Upstream  
Bitrate Ratio  
(All MEASUREMENTS ARE PER USER)

02:00:00 - 02:15:00 CST	10:00:00 - 10:15:00 CST	14:00:00 - 14:15:00 CST	22:00:00 - 22:15:00 CST
12-28	4.01 : 1	4.46 : 1	10.68 : 1
			4.56 : 1

FIG. 47b



205220" 446T8660

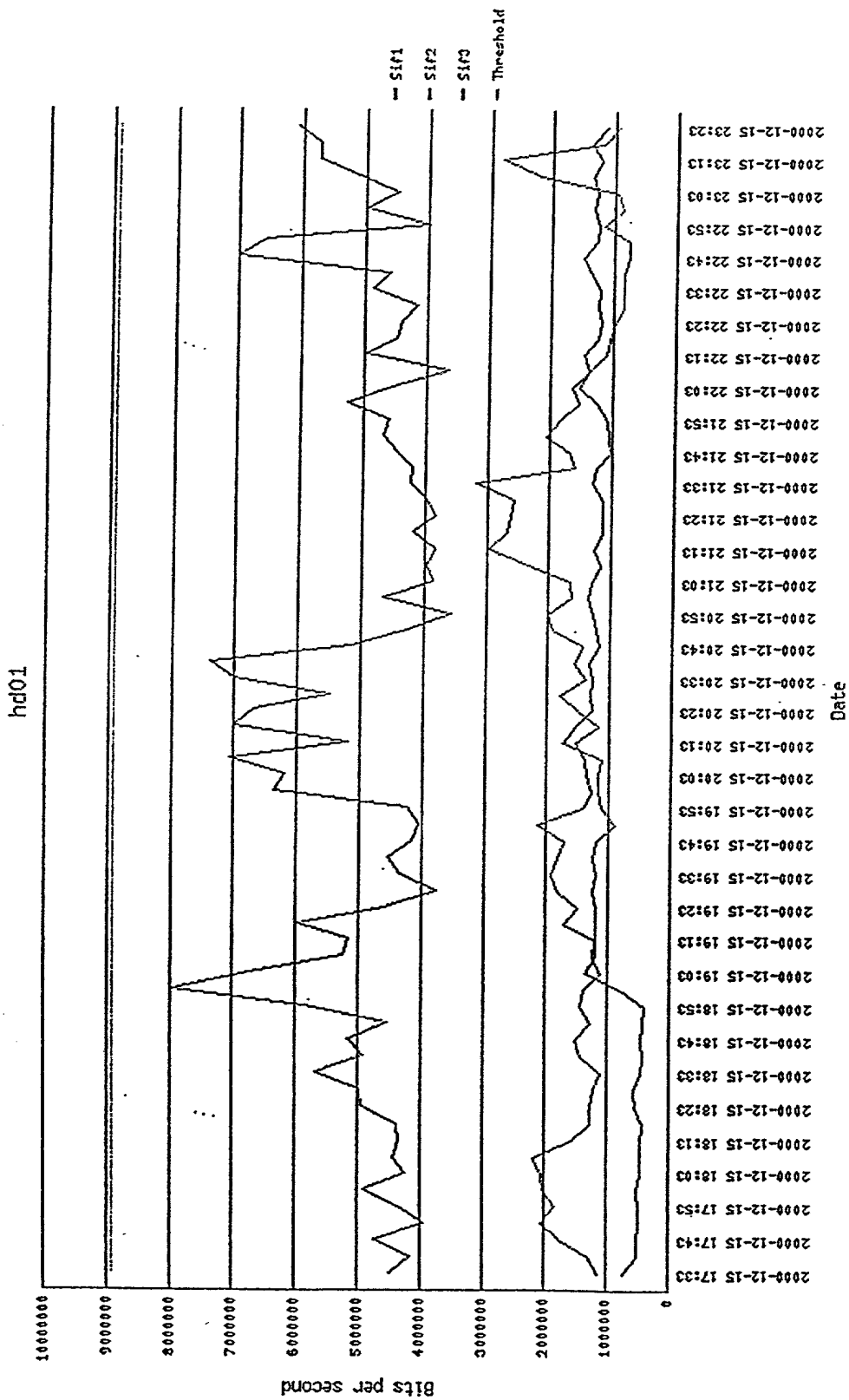


FIG. 48